Year 2000 drives Toyota to project management.
Corporate Strategies, page 43

COMPUTERWORLD

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September 22, 1997 · Vol. 31 · No. 38 · 170 pages · $3/Copy $48/Year

Fleet opens warehousing vault

▶ *$38M project to enable customized marketing*

By Craig Stedman

IN ONE OF THE broadest and most ambitious decision-support projects yet, Fleet Financial Group, Inc. is spending almost $38 million to build a data warehouse that will completely change the way it markets to customers.

Within five years, the Boston-based bank, the 11th largest in the country, expects a dramatic payback: a pretax earnings boost of more than $50 million per year.

CAROL LUBA

The bank wants to stop selling "the same things to everybody in the same way"

At the heart of the project, scheduled to go live in February, is a switch from traditional mass marketing to more targeted — and potentially more profitable — campaigns driven by database marketing software.

"Old-fashioned promotions

Fleet, page 14

Service pacts ease conflict

By Jaikumar Vijayan

CALL IT a pre-emptive strike weapon.

Under siege by frustrated users and determined to head off outsourcing efforts, more IS departments are hammering out service-level agreements with their internal clients.

The goal is to reduce conflict between information systems and users by agreeing up front on the type of service to be provided and ways to measure it.

"Without [service-level agreements], you are fighting on all fronts, but you don't have any targets," said Tom Bond, an application support manager at Zurich Technology Solutions, the information technology arm of Zurich Commercial Insurance in Baltimore. "There is incredible conflict over what are acceptable levels of service and what are not."

For years, companies have had agreements with external

Service pacts, page 14

DAVID ROSE

By Laura DiDio

Six months after taking over Novell, Inc., CEO **Eric Schmidt has garnered slightly better than average grades from his constituency.**

Novell CEO Eric Schmidt's hard work has won him user support

Schmidt, page 130

Microsoft's 'net spree sparks debate on grand plan

By Mitch Wagner and Carol Sliwa

DESPITE WEAVING a $2.1 billion-plus tapestry of acquisitions, investments and partnerships, Microsoft Corp. maintains it has no grand plan for dominating the Internet. Instead, most industry observers said, it is targeting specific niches following its late jump into the market.

But some skeptics persist in seeing signs of a global scheme to control cyberspace. Having

Microsoft, page 16

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IT BUDGET SURVEY

Finally, the year of the net is here

Recognizing that they can't live without their information networks, nearly seven out of every 10 corporations plan to invest more next year in network infrastructure and reliability. That's one of the trends uncovered by *Computerworld*'s survey on 1998 IS spending plans.

IS managers also expect to spend more on hardware, software and training — not to mention the bigger bucks required to hire top talent these days. But some IS departments may have to cut operational costs to fund the investments.

Managing, page 86

INSIDE THIS ISSUE

SPRINT TAKES THE LEAD
[illegible] Page 2
BANKING ON JAVA
[illegible] Page 4
Project hell
[illegible] Page 6
[illegible]CLE USERS SEE DOUBLE
[illegible] Page 82

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NEWS

TECHNICAL SECTIONS

FEATURES

ETC

Federal year 2000 failures appear likely

By Sharon Machlis

ALMOST HALF OF the major federal agencies are failing in their efforts to fix year 2000 problems, making some Jan. 1, 2000, malfunctions inevitable, the head of a congressional committee that oversees federal information technology charged last week.

And the White House budget office, which four months ago said year 2000 efforts are largely on track, is now warning that some agencies have shown a disappointing lack of progress.

"We know that there will be programs that fail, and therefore a chance that government payments will not be made," said Rep. Stephen Horn (R-Calif.), chairman of the House Subcommittee on Government Management, Information and Technology.

Horn couldn't predict which programs will miss the deadline. "Unfortunately, the real problem is that the agencies don't know either," he said.

"There is going to be a major rush of fixing and testing as the millennium approaches, and many computer programs simply will not be ready," he said.

And as part of its most recent year 2000 quarterly progress report, the U.S. Office of Management and Budget (OMB) is specifically targeting four departments — Agriculture, Education, Transportation and the Agency for International Development (AID). OMB officials said their office won't approve IT funding requests for anything other than year 2000 work until those departments can prove satisfactory progress.

Unexpected problems seem to be popping up as agencies roll up their sleeves and delve into the guts of their systems.

For example, AID only recently realized that its New Management System isn't year 2000-compliant. The agency assumed it was in good shape because its operating system and database software are compliant, but further testing revealed customized Visual Basic code was not, according to John Streufert, AID's information resources management director.

Twenty-eight data fields will need to be repaired, a task that can be "readily resolved," Streufert said.

At the Department of Agriculture, staffers this summer identified more mission-critical systems that need testing, according to Anne Reed, chief information officer. Thus, the agency doesn't expect to finish assessment until Nov. 1, more than four months after the governmentwide June deadline.

"We know that there will be programs that fail, and therefore a chance that government payments will not be made."
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The agency already decided to freeze money for new IT acquisitions "until we are where we need to be on year 2000," Reed said. "We are taking it very seriously. We are absolutely holding people's feet to the fire."

She pledged that her agency will "do everything humanly possible" to assure important systems' compliance before the Jan. 1, 2000, deadline. But she added, "I think any CIO who commits absolutely to [on-time 100% compliance] ought to be taken with adequate skepticism." One key, she said, will be ensuring proper oversight so efforts are focused on the most crucial systems first.

Separately, in 10 of 28 recent Defense Department Global Command and Control System tests, software failed when computer clocks were set to Dec. 31, 1999, and allowed to roll over into the "new year."

The OMB said most agencies are on schedule, and some are making good progress. But Horn's assessment was more grim. In his second annual year 2000 report card, he issued only one top grade, an A–, to the Social Security Administration.

Meanwhile, three agencies received F's — AID and the Education and Transportation departments — and eight others received D's, including the Commerce, Treasury and Justice departments.

"I do not see the sense of urgency that should exist," Horn said.□

IS managers are bending human resource rules to recruit tech talent. Managing, page 94

USS Command sails onto an intranet planning attack using browsers and Windows NT. The Enterprise Network, page 59

In this issue

NEWS

3 Win 98 delay is fine with users, who've learned not to count on slideware.

4 Megamerger propels Price Waterhouse, Coopers & Lybrand to forefront of consulting business.

6 IT projects slip as effect of IS labor crunch starts to manifest.

9 "Paranoid" users pose problem for builder of extranet for national security agencies.

28 Configuration error threatens to lay open Domino Web sites to hackers.

OPINION

37 Diversity challenges IS managers, who must integrate cultures, not just technology, Michael Schrage charges.

98 IS means innovation, but Peter G. W. Keen prefers Rubbermaid's style over Silicon Valley's.

131 IS salaries soar, prompting users who resent techies to actually hate them, Allan Alter warns.

TECHNICAL SECTIONS

CORPORATE STRATEGIES

43 US Airways signs up with Sabre, but the big deal is a challenge for both sides.

43 Skiing conglomerate turns to data warehouse to link legacies and help target its marketing.

43 Toyota motors up project management group to steer year 2000 repairs.

THE INTERNET

49 Ticket companies see Web as a natural sales channel, but surfers search more for information than tickets.

49 Real estate service leaps to build intranet to satisfy gut instinct, not return-on-investment analysis.

49 Firewall vendor shoots at bandwidth management and security.

THE ENTERPRISE NETWORK

59 Novell integrates NT and NetWare with new administration, software distribution tools.

59 Dueling standards threaten secure messaging on the Internet.

SOFTWARE

65 Data marts push the boundaries of manageability with warehouse-like data volumes.

65 Corning chooses PeopleSoft's untried manufacturing software because of shared customer focus.

70 Java suite demonstrates how portability improves productivity software.

SERVERS & PCs

77 PC users get more for their money, as tech rises and average prices fall.

MOBILE COMPUTING

81 Internet emerges as promising way to link remote users to E-mail, but hurdles remain.

81 Tunneling software links remote users and offices via inexpensive Internet connections.

FEATURES

MANAGING

88 IS budgets rise for 1998, with much of the money going to building and managing networks.

BUYER'S GUIDE

99 We deconstruct data mart and warehouse projects to help pick the approach that is right for you.

IN DEPTH

105 FCC prepares for a lot of new faces and a full plate of IT issues.

ETC.

Company index 129
Editorial/Letters 36, 40
How to contact CW 129
Inside Lines 132
Stock Ticker 128

Federal year 2000 failures appear likely

By Sharon Machlis

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UPFRONT

Y2K pledge

The year 2000 crisis was all over the news last week in alarming fashion:

■The White House raised to $3.8 billion its estimate of what it will cost the government to address the date-change problem. Critics say actual costs may be three times that figure. (See story, page 1)

■The Securities Industry Association said it's thinking about shutting down markets for a day around New Year's, 2000, to test for date bugs.

■A prominent economist, Edward Yardeni, said there's a real possibility of a mild recession in 2000 because of date-related computer failures. (See story, page 12)

Allow me to engage in a rare bit of self-promotion. Although the millennium bug is still news to a lot of people, it hasn't been to our readers. *Computerworld* has devoted more attention to this issue than any other industry publication for years — more than 1,000 stories at last count. We wrote our first story on the year 2000 problem in 1984, and it was a 1993 In Depth article by Peter de Jager that is widely credited with having brought the problem to the industry forefront. Our Web site, @Computerworld, maintains archives of year 2000-related articles, links, conference listings and forums. We've even published offbeat perspectives from people who say the whole thing is no big deal.

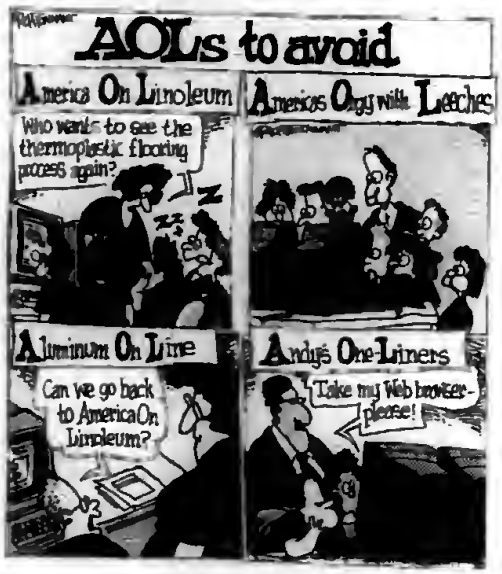
Year 2000 updates come early and often.

In the past year, a lot of industry publications have suddenly discovered the year 2000 problem. Their articles have had a wide-eyed, gee-whiz fascination, as if this was a novelty. It isn't. At *Computerworld*, we have taken the millennium problem deadly seriously since the beginning. As the clock ticks down (831 days to go!), *Computerworld* is dedicated to being the best source of news and analysis to help get your company safely to 1/1/2000.

Paul Gillin, *Editor*
Internet: *paul_gillin@cw.com*

THE FIFTH WAVE

BY RICH TENNANT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Sprint offers guarantee

▸ *Service provider may raise 'net performance bar*

By Matt Hamblen

SPRINT CORP. last week raised the bar for Internet performance guarantees, a move observers said could spur similar actions by competitors that want to bring more business customers to the World Wide Web.

Industry analysts said Sprint, in Kansas City, Mo., is the first Internet service provider to guarantee in writing end-to-end network access 99.5% of the time. A few providers offer formal guarantees of access, but only the backbone portion.

Analysts said the announcement could spark service guarantees by competitors.

Within two years, that could lead to quality-of-service offerings that will let a company reserve bandwidth over the Internet.

With quality of service, a company could reserve four hours per week, for example, to perform data-rich transmissions, including videoconferencing.

But users were mostly skeptical. "It's a sales tool by the [Internet service providers]," said Steve Engstrom, co-owner of Athletic Supply Co. in Seattle. "How would they track what they guarantee? You can only guarantee your side of the network, anyway."

Patrick Connolly, president of InvestorsEdge.com, a division of Neural Applications Corp. in San Francisco, said "The [service guarantee] trend is going to raise the bar across the board for [service providers], but I don't think it's terribly important. I don't think it will sway anybody to choose [one provider] over another. It's a cutthroat industry with thousands of players."

MEANINGLESS

Sprint is offering a 10% credit on a monthly dedicated port fee if performance levels aren't met. But Connolly, whose business depends on trading stocks over the Internet, said, "That's meaningless. Every minute I'm down, I would lose thousands of dollars in business."

Sprint officials said an average port charge for a T1 line connection is $2,000 per month. That would mean if a port were down for more than 3.6 hours per month, an automatic $200 credit would be earned.

John Moshier, Sprint's group manager for IP services, agreed that the 10% refund is "not enough." But customers don't care about the rebate, he said. "They want the network ready to be used at light speed all the time," he said.

Several analysts praised Sprint for moving to guarantees and said some companies will be willing to pay more for extra performance and the assurance that the network would be available for a critical purpose at any time.

"The Internet and company intranets are like drugs," said Rebecca Wetzel, an analyst at TeleChoice, Inc. in Verona, N.J. "You need more access to the Internet all the time, and if service providers can assure everybody of their fix, they will want it."

"I don't think it will sway anybody to choose [one provider] over another."
– Patrick Connolly, InvestorsEdge.com

But Wetzel criticized Sprint for setting up its guarantee so that a network administrator has to monitor his company's Internet usage to see if the access is there. Then "he or she has to fight for the discounts," he said.

Sprint should automatically provide the refund, Wetzel said.

In response, Moshier said some Sprint service representatives will do the monitoring for customers on a case-by-case basis. "This is not just fluff on paper," he said.

UUnet Technologies, Inc. in Fairfax, Va., and BBN Corp. in Cambridge, Mass., already offer formal guarantees that their network backbones will be available 99.9% and 99.99% of the time, respectively. But unlike Sprint's guarantees, those agreements don't apply to the local segment of the network, said Matthew Kovar, an analyst at The Yankee Group in Boston.

Sprint has been able to offer a more comprehensive guarantee for the local portion by hammering out guarantees with hundreds of local telephone companies that provide access to backbones, Kovar said. □

Users unfazed by Windows 98 delay

▶ *Trade-off garners single upgrade*

By April Jacobs

MICROSOFT CORP.'s decision to release an upgrade package to Windows 98 for current Windows 3.x and Windows 95 sites is just fine with users, who also shrugged off a delay of up to three months before Windows 98 ships.

"I think people learned the last time around not to base their buying decisions for hardware and software on something that doesn't exist yet. They learned that with Windows 95, which many people expected out much earlier than it was released," said Frank Isaacs, a Windows 98 beta tester and a developer at ExaSystems, Inc. in Raleigh, N.C.

MICROSOFT WINDOWS

Microsoft last week said it will delay Windows 98 to time its release with the now singular Windows 98 upgrade pack for Windows 3.x and Windows 95 users.

According to Dataquest, these two platforms will have about 262 million users by the end of the year.

Microsoft originally planned to ship Windows 98 in the first quarter next year, along with a Windows 95 upgrade pack. A Windows 3.x upgrade pack was set for release in the second quarter. The company now is targeting second-quarter deliveries for those upgrades.

Users said they would prefer the later ship date to separate releases.

LATER IS BETTER

"At least half of my users are still using Windows 3.1, so this will actually help me because I don't have to worry about which upgrade I'm doing on each machine. With two upgrades, it would have been a big hassle," said Dave Adams Saltz, president of Genesis Partners, a consulting group in Shrewsbury, Mass.

"And as far as lateness goes and beta testing, this is par for the course," said Saltz, who has been testing Windows 98 for several months.

"I would prefer to have one upgrade pack to cover both operating systems because people tend to be more disorganized when they have multiple sets of disks to deal with," said Larry Garden, manager of technical operations at Brewers Retail, Inc. in Mississauga, Ontario.

Garden, who has mobile users running Windows 95, said he isn't disgruntled yet about the delay. But he said he will be if Microsoft doesn't provide fixes for current bugs and forces him to wait for the upgrade and find his own fixes in the meantime.

Garden said he has problems when running Office 97 applications on Windows 95 in an environment where some users have older versions of Office.

Stacey Breyfogle, a product manager at Microsoft, said the upgrade for Windows 3.x required more testing than the one for Windows 95 because of hardware and software compatibility issues.

Breyfogle said user benefits include not having to determine which operating system a machine is running, because the software will automatically install the correct version. A separate resource kit will let companies that have a lot of desktops install the upgrade remotely from the network, she said. □

Switch promises extranet simplicity

By Bob Wallace

NEW OAK COMMUNICATIONS has developed a feature-packed switch that helps information systems managers control extranet access.

The Acton, Mass.-based startup last week announced the NOC 4000 Extranet Access Switch, a device that handles remote access for extranets. The NOC 4000 can customize access for each of up to 2,000 simultaneous remote users. The system uses quality-of-service mechanisms to ensure high-priority users get the best service.

The NOC 4000 supports firewalls, encryption and multilevel authentication. It also handles major tunneling standards, including Point-to-Point Tunneling Protocol, Layer 2 Forwarding and IPsec, a secure Internet protocol.

Users would need to buy a router, firewall, T1 multiplexer and related management systems to cobble together the equivalent of the NOC 4000.

"The all-in-one approach will enable IS managers to benefit from simplified network management and enjoy cost savings," said Craig Johnson, an analyst at Current Analysis, an Ashburn, Va.-based consultancy. "There's competition in this market, with some products offering subsets of the NOC 4000 and more on the way from the big players."

The switch will ship in November for $50,000. □

Data Mart
Dynamics
Data warehouse. Data mart. Data warehouse. The pendulum keeps swinging — which should come first? We studied various projects — some that took the top-down, data-warehouse-first approach, and some that enacted bottom-up strategies. Project managers and experts share their advice to help you choose which course is right for you.
Buyer's Guide, page 99

Electronic Messaging Association

IBM, Microsoft to make middleware pitch

By Tim Ouellette

IBM AND Microsoft Corp. are finding a middle ground with messaging middleware.

This week at the Electronic Messaging Association's conference in San Jose, Calif., the longtime rivals will release a joint specification that aims to get application companies to include hooks to their respective middleware products (see chart).

The companies argue that as users buy more packaged applications, they will need built-in middleware hooks so the applications can easily talk to one another. The alternative would require in-house programmers to patch the programs together.

Messaging middleware lets applications on different hardware platforms exchange data via secured data messages.

"This is not E-mail," said Peter Houston, product manager for Message Queuing Server middleware at Microsoft. "The focus is program-to-program messaging."

The combined effort is taking place because users will certainly be using both companies' products in the enterprise. IBM's MQSeries middleware works across a number of platforms, but Microsoft's Windows NT-only middleware will be built in to Windows NT.

MEETING IN THE MIDDLE

What IBM and Microsoft are doing to get developers to build middleware hooks into their applications:

- ▶ Joint BQM specification
- ▶ Internet service provider training in BQM integration at the Electronic Messaging Association this week
- ▶ IBM's MQWare, a tool kit to build BQM hooks for MQSeries into Windows NT applications
- ▶ Microsoft's shipment of its Message Queuing Server in NT Enterprise Server next month and regular Windows NT Server later this year

The specification, called Business Quality Messaging (BQM), will outline the similar features between MQSeries and Microsoft's Message Queuing Server, so independent software vendors can comfortably develop products that support BQM.

Colin Osborne, business manager for MQSeries at IBM, said the goal is to bring middleware from the back-end technical arena and clarify its benefits for end users.

And even though messaging middleware isn't electronic mail, E-mail networks could gain from use of the BQM specification [CW, Sept. 8].

Analysts have said that creating a reliable data messaging infrastructure will let E-mail pass over more reliable backbones, especially with users often attaching critical documents to their E-mail messages. □

Brazilian bank Java bound

▸ *$1.8 billion project expected to cut costs, increase market reach*

By Thomas Hoffman

BANCO DO BRASIL S.A. is pouring $1.8 billion into a variety of network computing and electronic commerce projects in what could be the largest dollar commitment to Java to date.

The goal of the 27-month project is to use the Internet to cut transaction costs, expand market reach and speed the development of new products and services.

Bank executives wouldn't speculate on the cost savings or productivity gains they expect the projects to deliver. But market research indicates that companies can knock 25% to 30% off the total cost of PC ownership — or up to $11,000 per year per PC — by using a network-centric approach to data management.

JAVA JUMP

Under the initiatives, announced in a teleconference with IBM last week, Banco do Brasil in Brasilia (*www.bancobrasil.com*) plans to train half its programming staff, or 900 programmers, in Java. The goal is to move its three home-banking applications to one Java-based application.

The bank, Latin America's largest retail institution, also plans to replace 80 million lines of platform-specific banking applications with 20 million lines of Java code.

That effort is expected to reduce the bank's software maintenance costs and allow the applications to be accessed by customers anywhere, regardless of their host computing platform.

RED TAPE

But one analyst, who described Banco do Brasil as a technological laggard, said the bank will be challenged to slash through its bureaucratic structure and manual-intensive processes.

Banco do Brasil "is a pretty inefficient organization that hasn't used technology very effectively," said Octavio Marenzi, a research director at Meridien Research, Inc. in Needham, Mass.

An IBM official said Brazil until recently required companies to purchase technology from Brazilian vendors. The bank's "hands were tied," during enforcement of that requirement, which was lifted four years ago, the IBM spokesman said.

Bank officials believe standardizing on Sun Microsystems, Inc.'s Java programming language will improve its time to market for new applications, and help to lower its costs per transaction.

Electronic transactions are expected to account for 85% of Banco do Brasil's total transaction volume by 2000.

– Hugo Dantas Pereira, Banco Do Brasil

For example, Hugo Dantas Pereira, Banco do Brasil's director of retail banking and technology, said he expects electronic transactions to account for 85% of the bank's total transaction volume by 2000. That compares with roughly half of all transactions today.

The $104 billion bank currently processes 35 million transactions per day. By the end of the year, the Banco do Brasil expects to handle 50 million transactions per day and is growing at a 20% annual rate.

A recent study by Booz Allen & Hamilton, Inc. in New York revealed that the cost of processing a customer transaction in a branch environment is roughly $1.08. In contrast, the same transaction conducted over the Internet costs a bank only 13 cents.

BANCO DO BRASIL'S IT PROJECT HIGHLIGHTS

Branch automation	Replacing 8-bit teller, ATM and back-office applications with 32-bit applications
Electronic banking	Consolidating three home-banking applications with one Java-based application
Online shopping	Setting up a pilot with five Latin American companies to test safe payment-card purchases over the Internet

The bank also plans to use IBM's Secure Electronic Transaction technology to provide online shopping for its customers by year's end.

REACHING OUT

With 4,300 branches worldwide, including offices in New York, London and Tokyo, Banco do Brasil hopes the Internet and Java will help expand its market reach.

Marenzi isn't so sure. Banco do Brasil's Internet-based banking "will have a low impact because of the small penetration" of household PC users in Brazil and other countries, he said.

According to Pereira, Banco do Brasil has 200,000 home-banking customers. He said the Internet will increase the bank's home-banking customer base to 500,000 clients by the end of next year.

An estimated $800 million of the $1.8 billion has been set aside for new branch automation technology to support Banco do Brasil's 4,300 branches. That includes the installation of 5,000 IBM OS/2 Warp Servers and 25,000 Pentium PCs. □

IT services boom sets megamerger in motion

▸ *Price Waterhouse and Coopers & Lybrand leap to forefront of industry*

By Jaikumar Vijayan and Thomas Hoffman

LAST WEEK'S megamerger propels Price Waterhouse LLP and Coopers & Lybrand LLP to the forefront of the fast-growing IT services industry.

But the scope of the proposed merger of the professional services companies with complementary strengths means it could be years before customers feel the effects.

"It is going to take at least that long to work out who is going to manage what and who gets ownership of what client," said Susan Scrupski, editor of "IT Services Letter," a newsletter in Woodcliff Lake, N.J.

Observers said the merger was prompted by the recent boom in the information technology services industry and the desire by both companies to position themselves at the front of the pack.

The proposed merger will send the combined entity to the top of the IT consulting business worldwide in terms of revenue and manpower.

The new organization will have combined revenue that exceeds $13 billion, approximately 135,000 employees and 8,500 partners worldwide.

It will offer a range of services that will include accounting and business advisory services, tax, management, human resources consulting and IT services.

"The growth factor in the consulting side makes you want to merge similar organizations" to be able to leverage combined skills, resources and manpower, said Tom Rodenhauser, editor of "Consultant News," a newsletter in Fitzwilliam, N.H.

"There is no doubt that the consulting business is driving growth in the Big Six community."
– Jan Butler, Price Waterhouse

"There is no doubt that the consulting business is driving growth in the Big Six community," said Jan Butler, director of communications for consultancy services at Price Waterhouse in New York.

In the long term, the merger will bring to the table a range of complementary skills and services that will give users a wider palette from which to choose, Rodenhauser said.

COMPANY RESUME

For instance, Price Waterhouse has carved itself a profitable niche in implementing packaged software and enterprise resource planning applications from SAP AG and The Baan Co.

The company also has successfully repackaged and resold skills from cutting-edge technology implementations within its organization.

For instance, Price Waterhouse was one of the earliest testers and implementors of Lotus Notes software — experience it used in building its Notes consulting practice.

Coopers & Lybrand meanwhile has been a heavyweight in areas such as business process re-engineering, operations management and human resources planning.

"Conceptually, there is potential between the two organizations [with their combined clout]," according to Thomas Conarty, director of IT at Bethelem Steel Corp. in Bethelem, Pa.

The company, which outsources most of its IT services to Electronic Data Systems Corp., has considered using Price Waterhouse for IT consulting.

It might do so in the future, too, "but it would depend on the specific expertise" required for the IT project in question, Conarty said. □

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Project management ills cost businesses plenty

▸ *Poor planning kills projects, pushes costs up*

By Julia King
SAN FRANCISCO

INFORMATION SYSTEMS project management is worse than awful, and it is costing companies more than $100 billion annually.

That's the good news.

The bad news is that a majority of companies remain incapable of or unwilling to make even modest changes that could slash development costs by millions of dollars each month.

Moreover, poor project planning and management are to blame for companies scrapping almost a third of new software projects for a loss of $80 billion annually. One out of two projects run more than 180% over budget for another $59 billion in losses, according to Meta Group, Inc. in Stamford, Conn. (see story at right).

Absent significant changes in project management, a 100-person application development group can expect to spend more than $10 million on canceled software projects over the next five years, according to Gartner Group.

Yet most companies still resist making improvements.

Gartner Group, Inc. in Stamford, Conn., estimated that only about 15% of companies have established central IS project offices. Most IS groups continue to operate largely by random procedures, with major project decisions and changes made during hallway chats or after work over drinks. As with most other project activities, those sessions go undocumented.

"We're living 'Dilbert,'" said one IS staffer whose 300-person SAP implementation team is split between two states and headed by no fewer than five project managers, none of whom is completely in charge of the project.

"We have no central project office and no methodology for meetings or communications. We have videoconferencing but don't use it," the IS staffer said.

Over and over, project managers who attended ABT Corp.'s Project Leadership Conference here last week told similar horror stories.

Mary Kay Cosmetics, Inc. in Dallas set up a central IS project office four years ago. But only half of the IS managers followed its standards and used the software it had developed to keep projects on track.

Lax enforcement was a major problem. "We have a very group-oriented culture, and a lot of our meetings end in hugs. There was no retribution for noncompliance," said Chip Martinez, director of Mary Kay's project office.

Since then, Martinez and his group have gone back to the drawing board to design a new project management methodology and an easier-to-use, World Wide Web-enabled system for tracking IS projects.

DETERRENT OF FEAR

Other IS managers resist tracking and sharing project data out of fear.

"We don't share our lessons learned — particularly our failures — because everybody is afraid their reputation will be tarnished or their legs will be cut off," said Tom Block, a former project manager at Perot Systems Corp. and Electronic Data Systems Corp.

Also, "most application development organizations do not have a consistent approach to estimating. Project managers use everything they're comfortable with, up to and including nothing," said Gartner analyst Richard Hunter.

Yet Hunter said companies could reduce their project failures by 80% by using standard procedures for estimating costs, tracking time and resources and documenting changes.

SmithKline Beecham Consumer Healthcare in Pittsburgh is among the few companies that have successfully set up a central project office with standard methods for running IS projects.

The upshot: "The time and cost of completing projects might be longer, but there are savings at the back end on maintenance because applications are built more accurately to specifications," said Rich Gennuso, group manager of project development.

One example is a $2.5 million financial application that required absolutely no changes or enhancements for more than two years, Gennuso said.

Still, "The challenge is how to get projects in flight," such as a $25 million sales force automation already under way at SmithKline Beecham, Gennuso said. "You don't want to slow them up" by introducing new procedures, he added. □

What's missing in project management?

Project office	42%
Integrated methodologies	41%
Training and mentoring	38%
Policies and procedures	35%
Implementation plans	23%
Executive support	22%

Base: 1996 survey of 300 project managers; multiple responses allowed

Source: Conseh Group, Inc., Elmwood Park, N.J.

How to establish a successful project office

- Start small with one or two projects — grow gradually
- Staff the office with experts
- Offer administrative and other services that project managers need
- Train project managers, especially on project management software tools

& Internal project management office helps Toyota tackle year 2000. Page 43

▸ *Shortage of expertise contributes to overruns*

By Thomas Hoffman and Julia King

THE IT LABOR crunch plaguing corporate America is starting to have a ripple effect on project overruns, new research has revealed.

According to a report from Meta Group, Inc. analyst Shawn Bohner, more than half of all new software projects throughout the U.S. are at least 180% over budget, which has resulted in $59 billion in losses to corporations.

One of the chief contributors to the project overruns, Bohner said, is a severe shortage of technical and project management expertise. Labor-strapped companies are being forced to promote technicians with little or no project management experience into managerial positions.

"Ideally, you want to have [a project manager] with a couple of small projects under the belt, but [companies] just don't have time to do that," said Bohner, who works at Meta Group in Reston, Va.

Bohner said project delays and cancellations will intensify as experienced managers continue to job-hop for fatter salaries. And that will cause information technology projects to slip even further as jilted companies lose time recruiting, hiring and familiarizing replacement managers with their corporate cultures. Bohner said most project management hires aren't fully productive for at least eight months.

TOO MUCH TURMOIL

Turnover has been a big problem at Chevron Information Technology Co. in San Ramon, Calif., where the completion of an integrated vessel support system has twice been pushed back and is now scheduled to roll out early next year — more than 20 months later than the original schedule. One of the primary reasons is that almost every person working on the project left for a better position.

"Every person but one turned over. What happens then is you lose track of the business drivers behind the project, and the project slides," said team leader Ann Keiko Seki.

At IBM, the upshot is more on-the-job training and mentoring, which can stretch out project times and burn out workers.

"We end up working more hours than what we normally would to get a project done," said Dwight P. Towler, an Indianapolis-based project executive at IBM Global Services.

LOTS OF NEW HIRES

Towler's unit last year hired 200 new people and expects to hire the same number this year. "I depend on my experienced people to provide mentoring," he said.

Towler's logistics and project management duties also have increased. "I have to do a lot more than manage the project. I have to blend project teams with experienced and inexperienced people. Who is available may not always be close enough in skills," he said.

Like some companies, PECO Energy Co. in Philadelphia has offset the talent crunch by augmenting its 286-person IT staff with contract resources. But to ensure the success of several ongoing projects — including a PeopleSoft, Inc. software installation — PECO by year's end plans to hire 40 to 50 managers who have a mix of project management and technical skills, said Cassandra A. Matthews, vice president of information systems and chief information officer at the utility.

The plan to blend technical and managerial skills already has boosted morale within PECO, Matthews said, "because people want the opportunity to do project management and hands-on technical work." □

Doing it right

There are, of course, successful project management stories.

Take J. B. Hunt Transport Services, Inc. in Lowell, Ark. Bob Logan, the company's CIO, has largely solved his IS turnover problems by promoting IS staffers who are 80% to 90% ready to move into midlevel and senior IS positions.

"We haven't seen any slippage in projects. We have gotten projects done quicker," Logan said.

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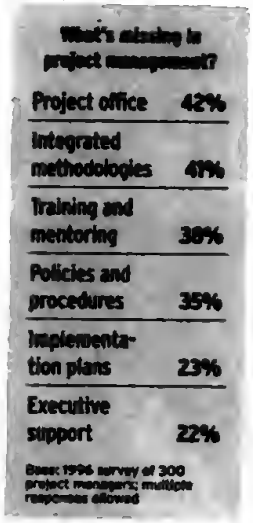
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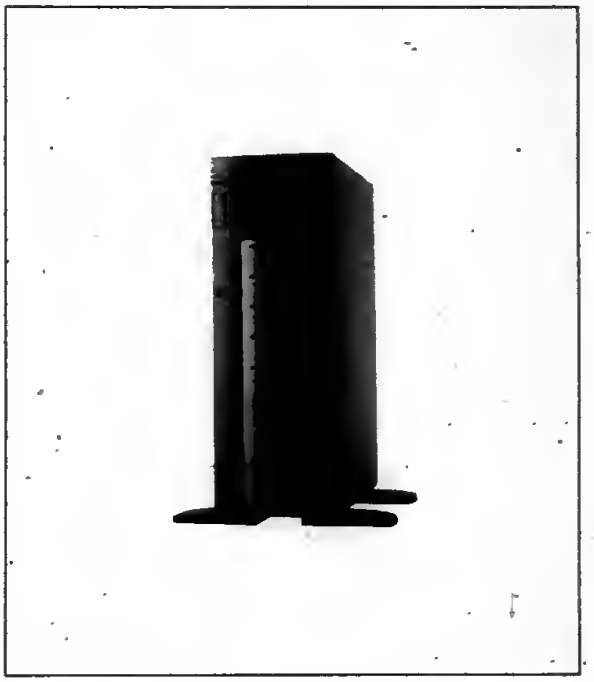
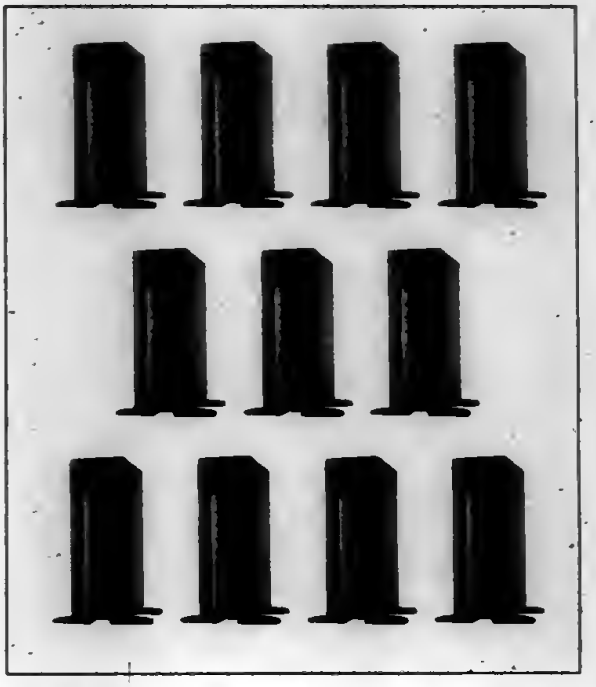
Microsoft Exchange Email

2,500 Oracle InterOffice Users on 1 NT Server



Database Messaging: 10-times more users than Microsoft

2,500 Microsoft Exchange Users on 11 NT Servers*



Data from Microsoft funded Zona Research study

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FRANKLY SPEAKING

Time for a bypass

FRANK HAYES

GORDON GILDER is railing against the old guard from the stage at his Telecosm conference in Palm Springs, Calif.

As his hands wave, the no-holds-barred futurist and author's predictions fly thick and fast: Pure Java will knock the props from under Microsoft's stock price. Television will be gone by 2020, after the Internet makes it obsolete in 2002. Local telephone monopolies will be broken by wireless phones and fiber-optic cable that circumvent the existing copper-wire networks.

Not everyone in the audience buys the whole package (especially the imminent demise of TV). But a theme is emerging, one that can be summed up in a single word: bypass.

Java will bypass Windows. Wireless and fiber will bypass the telcos. The interactive Internet will bypass passive television, and its wild frontier democracy will bypass the government regulatory process.

Just as desktop computers once allowed users to bypass IS. And just as a new collection of technologies and services is threatening to let users bypass IS once again.

No, it isn't just the Internet.

As technology gets easier to buy, IS gets easier to bypass.

And, in some cases, *only* to users.

Case in point: a division of Electronic Data Systems called DBIntellect Technologies. DBIntellect helps users create their own huge data warehouses for managing customer relationships. With the data, users can identify their best customers and fine-tune the opportunities to sell to them.

It's a classic use of a storehouse of business transactions — except that it's in the hands of the marketing department, not IS. In fact, DBIntellect refuses to work through an IS department; it works only directly with marketing.

Then there's NetDox in Deerfield, Ill., which delivers documents electronically — not just any old E-mail, but documents that ordinarily would be sent only by courier: letters of credit, contract-closing papers and the like. NetDox handles the encryption, authentication and security — and also offers up to millions of dollars of insurance for documents' integrity.

The cost? Less than an overnight package, and it's from a service backed by accounting firm Deloitte & Touche. What chief financial officer would trust electronic deliveries like that to IS?

Or consider IntraNetics, a start-up in Woburn, Mass., that hands users a prepackaged intranet with a collection of 17 applications, including expense reports, company directories and newsletters. IntraNetics designed its "intranet in a box" for small businesses but discovered that corporate departments enjoy the independence it gives them from IS.

And that list will keep getting bigger. Let's face it: As technology gets easier to buy, IS gets easier to bypass.

So what are your options? You could burn up precious political capital protecting your prerogatives. Fight hard enough, and you could probably wrestle those new systems out of the hands of user departments and back into IS — at least for a while.

But maybe, just maybe, you should let users have those "bypass" systems. If they're less expensive and more cost-effective than you can easily provide, why not?

Keep an eye on them, sure. And warn users if something may cause real problems down the road. But don't go grasping for control of every tiny fragment of information technology in your organization.

After all, don't you already have plenty to do without trying to be the old guard, too? □

Hayes is Computerworld's staff columnist. His Internet address is frank_hayes@cw.com.

SHORTS

Corel readies thin client

Corel Computer Corp. in Ottawa, a subsidiary of software vendor Corel Corp., will release a demonstration model of a network computer Oct. 27. The machine will run the Linux version of the Unix operating system. Early models will cost approximately $1,000. They will ship in the first quarter next year. The first version includes a World Wide Web browser and a hard drive that saves files locally in case the server goes down. It also will ship with a HyperText Markup Language editor, an electronic-mail client and some productivity applications, Corel officials said.

CPA board to certify Web sites

Accounting boards in the U.S. and Canada are launching a Web certification program aimed at building public trust in electronic commerce. The CPA Web Trust project will certify Web sites that adequately disclose their business practices. More information is available from the American Institute of Certified Public Accountants at *www.aicpa.org*.

PepsiCo denies mass IT exodus

Sources insisted that a recent report suggesting a mass exodus from PepsiCo, Inc.'s restaurant information technology operations was grossly inaccurate. A story published last week in the computer trade press stated that "scores" of PepsiCo information technology employees are leaving the company amid concerns about the company's spin-off plans. A highly placed source said the number of people that have recently left the division is "about a half-dozen." PepsiCo is spinning off its restaurant operations — which include Taco Bell, KFC and Pizza Hut — as Tricon Global Restaurants, Inc, on Oct. 7.

Intel, Compaq team up

Intel Corp. and Compaq Computer Corp. have formed a networking alliance on product development and technology licensing. The goal is to develop industry standards to guide product development. The alliance also will focus on high-speed networking products and product integration, such as incorporating gigabit-speed technologies into servers. Product announcements are expected in the fourth quarter, the companies said.

Police seek laptop-nappers

Police are asking for California motorists' help in finding three hijackers who kidnapped a truck driver in Irvine and took a load of computers and gear. The driver was unhurt, and the double-trailer truck was eventually found minus a cargo of laptop computers worth about $250,000, according to police.

Amex system goes down

Equity and index option trading on the American Stock Exchange was halted for 90 minutes last Tuesday when a glitch struck during a software upgrade. Normal trading resumed the following day, a spokeswoman for the exchange said.

Feds end Medicare project

The Department of Health and Human Services has stopped work on a major Medicare modernization project that was supposed to ferret out fraud more effectively and process claims payments faster. Agency officials questioned progress on the system in April because it was running behind schedule and over budget. A spokesman for lead contractor GTE Corp. said the system turned out to be more complex than anyone anticipated.

Lotus delivers for UPS

Lotus Development Corp. last week announced a deal with Atlanta-based United Parcel Service of America, Inc., under which UPS will add Lotus and IBM products to its electronic-commerce line. The companies will work together to build a customized version of Lotus Domino.Merchant and Net.Commerce software that will integrate UPS shipping and tracking features.

Unix utility bug alert

Certain versions of a Unix utility called rdist have a security hole that could allow any local user to get access to powerful root privileges on a system, according to the Computer Emergency Response Team (CERT) at Carnegie Mellon University. Versions of IBM's AIX and Sun Microsystems, Inc. operating systems are potentially vulnerable to the problem, which involves software for distributing files between machines. The CERT advisory is posted at ftp://info.cert.org/pub/cert_advisories/CA-97.23.rdist.

SHORT TAKES Sequent Computer Systems, Inc. in Beaverton, Ore., today will demonstrate Windows NT running on a Non-Uniform Memory Access server for the first time, using Oracle Corp.'s Parallel Server clustering technology. ... Cabletron Systems, Inc. in Rochester, N.H., will announce Gigabit Ethernet uplinks for its SmartSwitch 2000 and 6000 and the MMAC-Plus data center switch at Networld/Interop '97 next month in Atlanta. ... Intel this week will ship a new memory chip, dubbed Multilevel Cell Flash Memory. The chip will increase what can be put on flash memory chips in consumer devices.

Extranet to let security experts collaborate

▶ *But creator will need to convince 'paranoid' bunch*

By Carol Sliwa

FINDING IT HARD to get your users to trust the Internet with sensitive data?

Matt Donlon has an even tougher job.

As director of the security and intelligence office at the Defense Advanced Research Projects Agency (DARPA), Donlon has to persuade the nation's top national security experts to rely on an extranet to collaborate on projects and documents.

"I'm dealing with a paranoid bunch of folks," Donlon said.

But the advent of stronger encryption technology has helped Donlon push his Extranet for Security Professionals (ESP) project further than many expected. The major selling point is the potential to link a community of interest at low cost.

For example, Donlon said thousands of people from government agencies and contractors have spent more than seven years trying to write a document called the National Industrial Security Program Operating Manual. Countless pages have been printed, and countless hours have been spent on long-distance telephone calls. And the manual isn't finished yet.

But with ESP, collaborators could hold chat sessions, access documents for editing and even take votes without having to leave their desks.

NO CLASSIFIED DATA

No classified documents will be available through ESP. Rather, encrypted information in the "for official use only" category will be accessible via trusted Internet connections.

The information could be as innocuous as a calendar of security-related events or a list of surplus equipment. But the extranet also could be used to post threat-related information, such as suspicious individuals at airports, Donlon said.

All information will be protected by 128-bit encryption during transmission from the World Wide Web server to the user. Extrasensitive data will be further protected using 512-bit encryption.

End-users can access ESP only if they have browsers that can handle 128-bit encryption. Logging in with a password triggers software that determines the individual's level of access.

The extranet was built by Herndon, Va.-based contractor SecTek, Inc., which purchased a Certificate Server from Netscape Communications Corp. and Netscape's Enterprise, Messaging and Catalog servers.

DARPA also hopes to use Internet-based virtual private networks (VPN) to create trusted links among the networks of various government agencies and defense contractors.

"With VPN software, can the Internet be used with this level of security? I think it can," said Ezra Gottheil, an analyst at Hurwitz Group, Inc. in Newton, Mass. More difficult, he said, will be the organizational issues.

Donlon has already encountered some of those issues.

One government office is so paranoid that it is building a secure room inside of a secure room inside of a secure building to house its lone Internet connection to the world.

The ESP project isn't finished yet. Donlon said he needs about $1.5 million and another four months to continue spreading the word and keep the project on track.

His mantra? "Run like hell, and give nobody a chance to say no." □

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Microsoft seeks to woo Web developers away from Java

By Sharon Gaudin

MICROSOFT CORP. is holding out its new "scriplets" like electronic candy, trying yet another ploy to lure developers away from Sun Microsystems, Inc. and its Java programming language.

Microsoft officials last week said the company will incorporate scriplets, which are reusable chunks of dynamic Hypertext Markup Language (HTML) code, in Internet Explorer 4.0. Like rival Java applets, scriplets can be used to build dynamic World Wide Web pages and business applications or add cross-platform capabilities. Using the scriplets, developers can build certain parts of their Web pages, such as a navigation bar, for example, only once because they can save and reuse that chunk of code.

Microsoft officials said the scriplets aren't an attack on Java. Tom Johnston, group product manager at Microsoft, said scriplets focus solely on Web page presentation and layout. Java applets can do the same thing but have the added advantage of doing complex calculations.

"This is part of the skirmish," said Stephen Blaha, president of Bali Software Ltd., a consulting and training company in Derry, N.H. "Quite frankly, I'm unexcited about overlaps of functionality. I will take a look at [the scriplets], but if I don't get something out of it that I don't already have, I'm not going to get caught up in the cross-current."

Evan Quinn, an analyst at International Data Corp. in Mountain View, Calif., said Microsoft may find itself in an uphill battle in its push for scriplets. "For most Web sites, HTML with Java applets is a pretty decent combination," he said. "There are enough tools out there to allow you to take advantage of Java. But Microsoft sure is trying to put as much pressure as they possibly can on Java.

"I almost feel like Microsoft is being a little schizophrenic," Quinn said. "They point out how wonderfully fast [Internet Explorer 4.0] is at processing Java, and then they say they're not going to have Java on their Web site. They push scripting with HTML. Suddenly Microsoft is talking more about Java than Sun is."

JAVA PERFORMANCE AN ISSUE

The scriplets announcement came less than a week after Microsoft called for nearly all Java applets to be removed from its Web site. Many users and analysts saw that move as a direct attack on Java, but Tim Sinclair, editor in chief of the site, said he made the decision based purely on performance issues.

"The first time someone comes to a Web page, applets have to be moved down to their machine, and sometimes those applets can be pretty big. That chews up bandwidth," Sinclair said. He said it probably will take 30 to 60 days to get the applets off the site.

Sinclair also said he had problems with Java's cross-platform performance. Some applets didn't run the same way on every operating system. "You don't have to worry about that with HTML," he said.

"We find it an interesting and, in some regards, amusing situation," said David Spenhoff, director of product marketing at JavaSoft, the Java-focused division of Sun. "Java is so good they have to issue a directive to get it out of the company."

Microsoft pointed out HTML's platform-independent capabilities, yet scriplets will run only in Internet Explorer 4.0 and not in Netscape Communications Corp.'s popular Navigator browser.

John Connolly, at the San Francisco-based Internet division of Neural Applications Corp., said, "On the surface, scriplets sound redundant [to Java applets], but if you're in the trenches doing Web pages, it could be useful." Connolly uses Java applets and Microsoft's ActiveX components.

1 BLURRED ELEPHANT SCREAMING ACROSS BONNEVILLE SALT FLATS.

2 ELEPHANT HAVING A CRUISE MISSILE.

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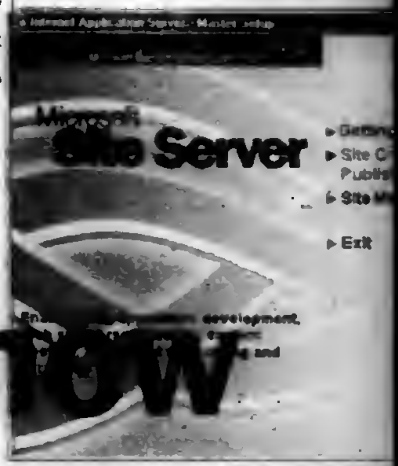

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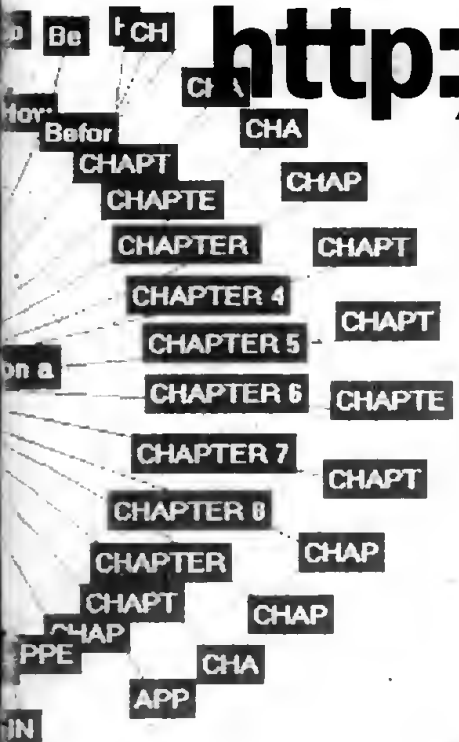

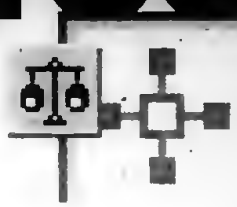

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Oracle app users await browser

By Randy Weston
ORLANDO, FLA.

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The company needs to ensure that Oracle's Web-based apps can handle high-volume transactions

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Subaru wants the system to hook up its dealers and service centers spread out across the nation.

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Economist predicts Y2K-based recession

By Robert L. Scheier

MANY PEOPLE predict doom and gloom over the year 2000, but few will put specific odds on big trouble. Wall Street economist Edward Yardeni is doing exactly that.

In a report issued last week, Yardeni predicted there is a 35% chance that year 2000 software bugs will cause "at least a mild global recession" in that year. That's up 5% from the odds he gave in mid-July.

YEAR2000

"The more I read, the more convinced I am that some economic disruptions are inevitable," wrote Yardeni, chief economist at Deutsche Morgan Grenfell, Inc., a London-based investment bank. "The year 2000 problem is a serious threat to the global economy. Yet it isn't being taken seriously enough."

Edward Yardeni's report can be found on the World Wide Web at www.yardeni.com

Most systems will be fixed on time and thus will be able to distinguish the 20th and 21st centuries, Yardeni said. But because companies are so tightly linked via computer, even a few small failures could have a domino effect, he said.

ABOVE AVERAGE

Many consultants have already warned of how a year 2000 bug at a supplier, for example, could shut down an auto assembly plant. But Yardeni's warning is unusual because it is so specific and because of his strong reputation as an economic forecaster.

After the 1987 stock market crash, Yardeni defied conventional wisdom by predicting that the Dow Jones industrial average would reach 5,000 by 1993. When it reached that point in 1995, he predicted a rise to 10,000 by the turn of the century. The Dow is already more than halfway to that level — with more than two years to go.

Yardeni, a former chief economist at other Wall Street firms and an economist at the Federal Reserve Bank of New York, admitted his recession prediction isn't precise.

It isn't based on original research, but on public documents from such sources as the Federal Reserve Bank, the Internal Revenue System and European banking regulators.

"I'm not going to pretend that forecasting is a science," Yardeni said. His recession alarm is instead a warning that governments and businesses need to do more to solve the year 2000 problem.

Last week, for example, U.S. Rep. Stephen Horn (R-Calif.) gave almost half of all federal agencies grades of "D" or "F" on their year 2000 work and said the White House doesn't have the proper "sense of urgency" about fixing the bug (see related story, page 1).

David Iacino, a senior manager heading the year 2000 effort at BankBoston Corp. in Boston, said Yardeni's prediction is "on the reasonable side" based on the progress to date toward solving the problem.

But he predicted financial institutions will step up the pace of repairs and thus greatly reduce the risk.

And bank regulators "are into heavy contingency planning" to make sure any year 2000 problems don't spread," Iacino said. "They can't allow that kind of break in the faith that this country has in its financial institutions." □

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Java flavors Oracle OpenWorld '97

By Craig Stedman

ORACLE CORP. this week will outline heavy-on-the-Java plans for taking its year-old multitier computing scheme from marketing vision to reality.

Oracle has shipped some basic building blocks of the Network Computing Architecture (NCA), which is meant to be an object-based infrastructure for connecting end users to distributed servers.

Software that already went out the door includes the Oracle8 database and a World Wide Web-based application server.

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Sources said it will still take until the middle of next year or later for some of the technology to appear — especially support for writing Java code above the client level. But Oracle users said they were at least glad that the Redwood Shores, Calif., company is gradually moving NCA out of vaporware limbo.

"We've bought in to it conceptually, and now we're down to the point where we really need to start doing this stuff," said Michael Prince, chief information officer at Burlington Coat Factory Warehouse Corp. in Burlington, N.J. "If Oracle doesn't deliver, our Plan A is right out the window."

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Other products on Oracle's OpenWorld agenda

Product	Features	Availability
InterOffice 4.1 groupware	Better Internet E-mail support and Java applets	Now
Personal Oracle Lite 3.0	Java-enabled version of Oracle's mobile database	December
Oracle Fail Safe	New fail-over clustering software for Windows NT	Within 30 days

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Exchange, GroupWise mix it up

▸ Upgrades will help corporate users create Internet/messaging blend

By Barb Cole-Gomolski

NEW VERSIONS of Microsoft Corp.'s Exchange and Novell, Inc.'s GroupWise messaging servers will make it much easier for businesses to blend in-house messaging systems with the Internet.

Microsoft last week made a final beta release of Exchange 5.5 available on its World Wide Web site, and Novell shipped GroupWise 5.2. Both offerings add support for Internet Message Access Protocol 4, a feature that gives users more flexibility in the way they retrieve messages, and the Lightweight Directory Access Protocol for adding and checking directory information from Web browsers.

Support for these protocols is seen as key to integrating corporate electronic-mail systems with the Internet, which is expected to reduce costs and improve the interoperability of messaging systems.

The Exchange upgrade, which won't ship until year's end, will bring a much-anticipated boost in scalability by lifting the current 16G-byte limit on per-server message storage.

"For once, we are excited" about an Exchange upgrade, said Brian Leonard, a senior business analyst at Raleigh, N.C.-based Carolina Power & Light Co., which is moving 6,000 users to Exchange.

Besides the improved scalability, Leonard lauded the new groupware features in Version 5.5, which include a chat service and an expanded object library for building groupware applications.

Tom Austin, an analyst at Gartner Group, Inc. in Stamford, Conn., said, "[Exchange 5.5] will enable a number of organizations who committed to Exchange but froze implementation because of that [16G-byte] limit to begin major rollouts."

The upgrade doesn't fix directory issues that block the global deployment of Exchange in some sites that have multiple remote domains, he said. "For that, customers will have to wait until Windows NT 5.0 ships in the second half of 1998," Austin said. At that point, Exchange can take advantage of NT 5.0's Active Directory.

Like the Exchange sites, GroupWise users will see better Web integration with the 5.2 upgrade. But several beta testers said the most significant improvement in GroupWise 5.2 is that it brings much-needed stability to Novell's messaging platform. □

Seven steps to service-level agreements:

- Review and clarify service needs and concerns
- Decide what service-level agreement can accomplish
- Talk about scheduling, roadblocks and the division of responsibility
- Create a structure for the agreement; solicit feedback on the contents
- Use the feedback for further negotiations, approvals and finalization
- Develop tracking mechanism and reporting processes
- Provide a point of contact for problems

Source: Summarized from Karten Associates newsletter, "Perceptions & Realities," Randolph, Mass.

Service-level pacts set user expectations

CONTINUED FROM COVER 1

service providers, such as telecommunications companies and network providers, under which payment was linked directly to service and performance levels. But consolidations, acquisitions and the trend toward outsourcing are forcing more IS organizations and users to explore such agreements internally, analysts said.

First Union Corp. in Charlotte, N.C., has had service-level agreements with external providers for years. It uses key performance indicators to measure previously agreed upon criteria for baseline service levels.

The bank now wants to extend the same concept internally. The IT department is writing up service agreements with users, under which it will use its indicators to initially measure things such as response time and procurement requests.

"The idea is to better define and manage expectations so that each of us are able to perform our jobs better. ... It is going to be a measurable agreement," said Robert Van Dyke, assistant vice president of IT/automation at First Union. "The challenge is to get people used to the idea and to accept it."

"Increasingly, [service-level agreements] are becoming the major underpinning for the way services are delivered to internal IS customers," said Naomi Karten, president of Karten Associates, Inc., a management consultancy in Randolph, Mass.

Also pushing service agreements is the specter of IS organizations having to compete with external vendors for their company's business, or being legally broken off into separate units with their own profit/loss responsibility. "Coropanies really need a business case to keep things in-house," and one of the best ways to do that is through [service-level agreements], said Allie Young, an analyst at Dataquest in Westboro, Mass.

For example, the Zurich Insurance Group's data center was forced to the negotiating table as the result of a consolidation in 1994. The data centers of six insurance companies belonging to the Zurich Group, which has assets of $70 billion, were merged into one center at the firm's U.S. headquarters in Schaumberg, Ill.

"The move didn't make us very popular," said Ron Riddehouth, manager of client services at the Zurich Group's consolidated data center. "Data centers were being taken away from each of these companies, and users were being forced to deal with people and service conditions that were totally unfamiliar" to them, he said.

But users pushed the data center to forge separate service pacts with each of the six companies. "We are doing real well now," Bond said. □

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Fleet building on data skyscraper

CONTINUED FROM COVER 1

where we just blast out a million pieces of mail and see what sticks will pretty much disappear. Those just aren't effective enough," said Randy Grossman, senior vice president of customer data management and analysis at Fleet.

Banks "are notorious for having unprofitable customers and products," in part because their production systems are usually so fragmented, said Wayne Eckerson, an analyst at Patricia Seybold Group in Boston who is familiar with Fleet's project.

With that in mind, the bank expects to improve its ability to keep profitable customers from skipping off to other financial services companies.

Internal analysis has shown that simply reducing the attrition rate among the top third of Fleet's customer base by 2% "would be worth $20 million a year to us," Grossman said.

Fleet's warehousing plan

- Budgeted development cost: $37.7 million
- Projected annual support costs: $6.5 million
- Projected payback: 3.5 years from start of development
- Expected number of initial users: Up to 100

RACING THE CLOCK

Fleet, with assets of $83.4 billion, wasn't one of the early blazers of the warehousing trail. "But if they execute on their vision now, they'll be one of the top retail banks that is using a data warehouse for competitive advantage," Eckerson said.

Competitive pressures drove Fleet's big-bang approach to building the warehouse, Grossman said. "We're hardly the only bank that's looking at new ways to use information," he said. "The stakes were too high to move forward gradually, so we chose to bite off as big a bite as we tenably could."

The bank and a gaggle of consultants began development work 13 months ago on the $37.7 million project, which includes a 1T-byte warehouse, a pair of marketing data marts with more than 500G bytes between them and implementation of analytical tools and database marketing software made by Exchange Applications, Inc. in Boston.

A prototype warehouse was finished this summer, and the loading and testing of the real deal is due to start in December, Grossman said. The first phase involves data on consumers and small-business customers that was culled from 36 mostly mainframe applications. Phase two, slated for next year, will add commercial customer data from 34 production systems.

Fleet is among the companies at the forefront of installing new database-driven marketing technology [CW, Sept. 15].

The campaign management and statistical analysis software is supposed to enable Fleet's marketing department to target a mix of promotions at smaller segments of its customer base. The goal: producing more sales at less cost.

Since implementing similar software last year, Federal Express Corp. in Memphis has seen nearly a 300% increase in direct-mail response rates and is growing revenue at an 8-to-1 ratio compared with the cost of marketing campaigns.

"We're spending less and getting more. That's a hard equation to argue with," said Tom Wicinski, manager of international marketing analysis at the delivery company. □

& Mondo marketing databases present some management problems. Page 65

Exchange, GroupWise mix it up

▸ *Upgrades will help corporate users create Internet/messaging blend*

By Barb Cole-Gomolski

NEW VERSIONS of Microsoft Corp.'s Exchange and Novell, Inc.'s GroupWise messaging servers will make it much easier for businesses to blend in-house messaging systems with the Internet.

Microsoft last week made a final beta release of Exchange 5.5 available on its World Wide Web site, and Novell shipped GroupWise 5.2. Both offerings add support for Internet Message Access Protocol 4, a feature that gives users more flexibility in the way they retrieve messages, and the Lightweight Directory Access Protocol for adding and checking directory information from Web browsers.

Support for these protocols is seen as key to integrating corporate electronic-mail systems with the Internet, which is expected to reduce costs and improve the interoperability of messaging systems.

The Exchange upgrade, which won't ship until year's end, will bring a much-anticipated boost in scalability by lifting the current 16G-byte limit on per-server message storage.

"For once, we are excited" about an Exchange upgrade, said Brian Leonard, a senior business analyst at Raleigh, N.C.-based Carolina Power & Light Co., which is moving 6,000 users to Exchange.

Besides the improved scalability, Leonard lauded the new groupware features in Version 5.5, which include a chat service and an expanded object library for building groupware applications.

Tom Austin, an analyst at Gartner Group, Inc. in Stamford, Conn., said, "[Exchange 5.5] will enable a number of organizations who committed to Exchange but froze implementation because of that [16G-byte] limit to begin major rollouts."

The upgrade doesn't fix directory issues that block the global deployment of Exchange in some sites that have multiple remote domains, he said. "For that, customers will have to wait until Windows NT 5.0 ships in the second half of 1998," Austin said. At that point, Exchange can take advantage of NT 5.0's Active Directory.

Like the Exchange sites, GroupWise users will see better Web integration with the 5.2 upgrade. But several beta testers said the most significant improvement in GroupWise 5.2 is that it brings much-needed stability to Novell's messaging platform. □

Fleet building on data skyscraper

CONTINUED FROM COVER 1

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& Mondo marketing databases present some management problems. Page 65

Seven steps to service-level agreements:

- Review and clarify service needs and concerns
- Decide what service-level agreement can accomplish
- Talk about scheduling, roadblocks and the division of responsibility
- Create a structure for the agreement; solicit feedback on the contents
- Use the feedback for further negotiations, approvals and finalization
- Develop tracking mechanism and reporting processes
- Provide a point of contact for problems

Source: Summarized from Kerton Associates newsletter, "Perceptions & Realities," Randolph, Mass.

Service-level pacts set user expectations

CONTINUED FROM COVER 1

service providers, such as telecommunications companies and network providers, under which payment was linked directly to service and performance levels. But consolidations, acquisitions and the trend toward outsourcing are forcing more IS organizations and users to explore such agreements internally, analysts said.

First Union Corp. in Charlotte, N.C., has had service-level agreements with external providers for years. It uses key performance indicators to measure previously agreed upon criteria for baseline service levels.

The bank now wants to extend the same concept internally. The IT department is writing up service agreements with users, under which it will use its indicators to initially measure things such as response time and procurement requests.

"The idea is to better define and manage expectations so that each of us are able to perform our jobs better. ... It is going to be a measurable agreement," said Robert Van Dyke, assistant vice president of IT/automation at First Union. "The challenge is to get people used to the idea and to accept it."

"Increasingly, [service-level agreements] are becoming the major underpinning for the way services are delivered to internal IS customers," said Naomi Karten, president of Karten Associates, Inc., a management consultancy in Randolph, Mass.

Also pushing service agreements is the specter of IS organizations having to compete with external vendors for their company's business, or being legally broken off into separate units with their own profit/loss responsibility. "Companies really need a business case to keep things in-house," and one of the best ways to do that is through [service-level agreements], said Allie Young, an analyst at Dataquest in Westboro, Mass.

For example, the Zurich Insurance Group's data center was forced to the negotiating table as the result of a consolidation in 1994. The data centers of six insurance companies belonging to the Zurich Group, which has assets of $70 billion, were merged into one center at the firm's U.S. headquarters in Schaumberg, Ill.

"The move didn't make us very popular," said Ron Riddehouth, manager of client services at the Zurich Group's consolidated data center. "Data centers were being taken away from each of these companies, and users were being forced to deal with people and service conditions that were totally unfamiliar" to them, he said.

But users pushed the data center to forge separate service pacts with each of the six companies. "We are doing real well now," Bond said. □

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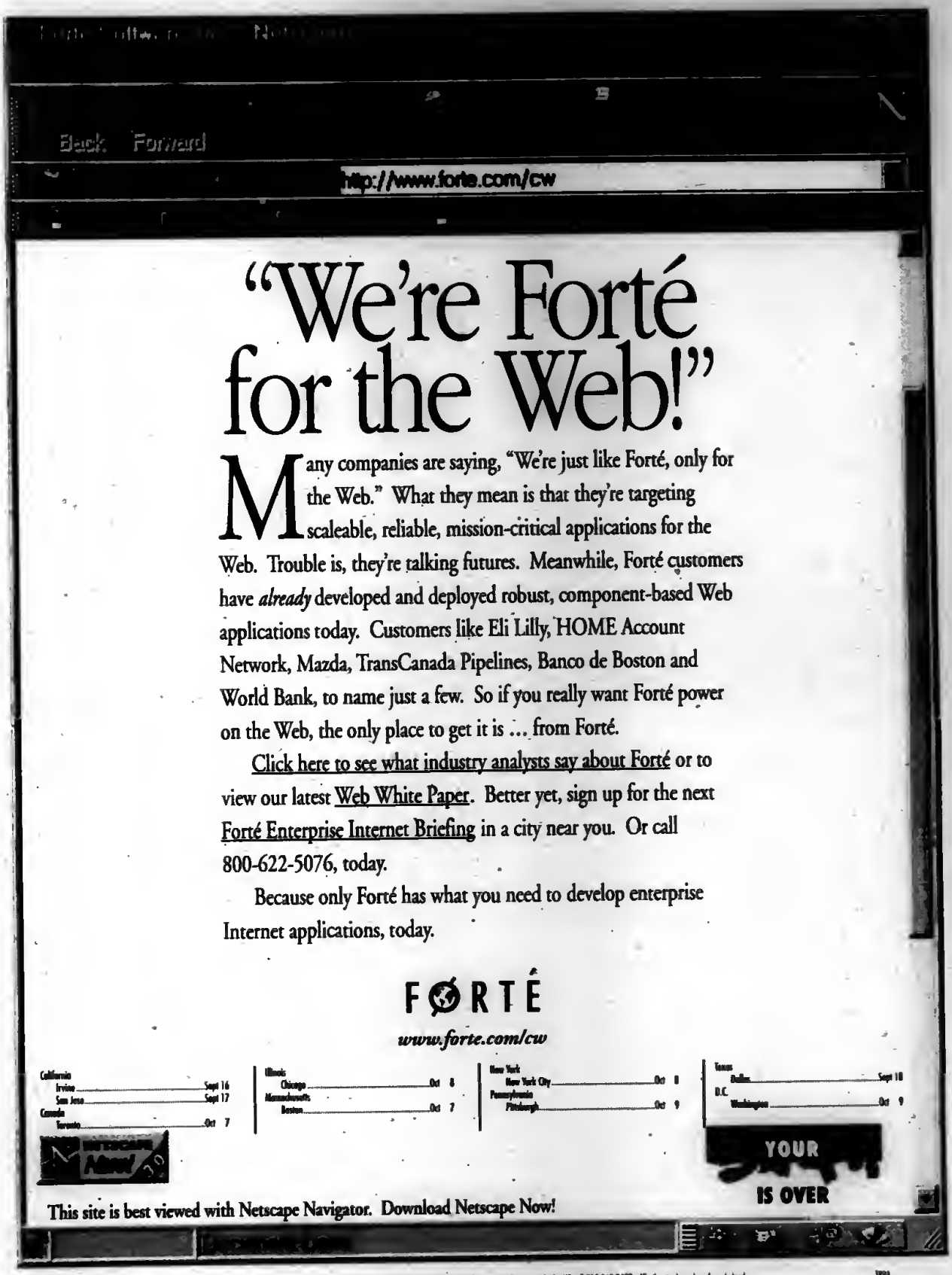
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Microsoft 'net spree raises eyebrows

CONTINUED FROM COVER 1

seen Microsoft overpower desktop competitors, the observers said the company's current flurry of Internet activity gives them pause.

They said the purchases and investments are just one face of Microsoft's overall strategy for domination: The company starts with browsers, servers, development tools and Internet access and then moves on to controlling the emerging technologies of video on the Internet and the Internet over television.

A GOOD THING

Users, who appear to be watching Microsoft's virtual exploits with more interest than normally reserved for corporate initiatives by their vendors, said Microsoft's exertion of greater influence on the Internet is likely to be good for companies that want to do business online.

About a dozen users interviewed by *Computerworld* said Microsoft's presence can legitimize marginal technology — such as real-time video — and help standardize tools and protocols. Although some users said they see a danger in Microsoft seeking a monopoly on the Internet, most said that will be overwhelmingly difficult for Microsoft to achieve in light of the stiff competition the company faces.

"This is the same thing they've done in other areas of technology," said Joshua Tretakoff, manager of alternative media at The Sharper Image Corp. in San Francisco.

Tretakoff said Microsoft is out to take over cyberspace. "It's just like Excel capturing the Lotus 1-2-3 market and Word capturing the word processor markets. The Internet represents the last flag to be planted by Microsoft."

Officials at industry rivals, including Netscape Communications Corp., Oracle Corp. and Novell, Inc., generally said Microsoft's acquisitions are part of its scramble to fill technology gaps after coming late to the Internet party.

Netscape co-founder Marc Andreessen described the strategy as "chaotic," but Novell CEO Eric Schmidt described it as "smart," because the acquisitions have been small and were designed to fill specific gaps.

Andreessen said, "Basically, their product managers were told, 'Become successful in the Internet space.' And the product managers sat down and said, 'Oh my God, we don't have any products. What do we do? OK, let's go buy some.'"

SIMILARITIES

In some ways, Microsoft's strategy is similar to its competitors. Like Netscape, Microsoft offers a World Wide Web browser. And like Netscape, IBM and Oracle, it offers development tools, general-purpose servers and other servers specialized for specific tasks, such as commerce and publishing.

But in other ways, Microsoft's strategy is very different. No other computer company has jumped into noncomputer markets such as cable television, TV-based Internet access, Web content and broadcast news. Microsoft clearly is looking at the new markets in a way that is totally different from its computer rivals.

Moves such as those require some level of strategizing, some observers said.

As broad as Microsoft's net has been, it isn't universal.

Microsoft's browsers, servers and tools mostly are low-end, users and competitors said. They lack connectivity to mainframes and databases and scalability for high-end transactions.

That differentiates Microsoft from competitors such as IBM and Oracle, which tie their Internet product strategies tightly with their other enterprise offerings.

It means users who want to standardize on Microsoft products need to use third-party or custom solutions for enterprise connectivity — or rethink their decision.

"That hasn't been Microsoft's strength," said John Patrick, vice president of Internet technology at IBM. "The core integration of the enterprise through knowledge of business processes is not something you think of when you think of Microsoft."

The company has been close-mouthed about the strategy behind its corporate purchases and investments, making only its chief financial officer available for an interview on the subject. "There's no hard and fast rules, but there's a logic," said Microsoft CFO Greg Maffei. "Microsoft is continuing to look for ways to expand our customer offerings to provide additional value to the product marketplace." He denied that Microsoft has an overall strategy for controlling the Internet.

Nonetheless, there are plenty of opinions in the industry about what is behind Microsoft's corporate purchases.

"They tend to buy in a very opportunistic way, and I don't mean that in a pejorative sense," said Harry Fenik, an analyst at Zona Research, Inc. in Redwood City, Calif. "They're very up-front about the fact that for everything they choose to do, they make buy-vs.-build decisions."

LOADS OF CASH

A large liquid reserve — Microsoft has $9 billion in cash and easily liquefied assets — means the company can and often does choose to acquire companies to get talent and technology that it needs.

Microsoft has expended substantial quantities of cash on a collection of 20 Internet-related purchases, investments and joint ventures since 1995 — mostly divvied up among tools for building and running Internet and electronic-commerce sites, Internet/video convergence technology and bandwidth providers.

Even if Microsoft is trying to dominate the Internet, it will find it difficult to do so: The competition is smart and agile, and users value diversity, experts said.

DIFFERENT ARENA

"In this channel, people will want to differentiate themselves," said Paul Gaffney, senior vice president of systems development at Office Depot, Inc. in Delray Beach, Fla. "There will always be a demand for better and more useful stuff. It won't be a case of everybody wanting to use the same thing, as on the desktop."

And should Microsoft manage to get a lock on Internet tools, that might not be so bad, company defenders said.

Acknowledging the risk of stifled innovation and high pricing that come from any monopoly, they also noted that Microsoft's embrace of technology could end standards wars and give marginal technologies — such as Internet video and TV-based Internet access — the stamp of legitimacy.

"I don't think we complained real loudly when we standardized on paper sizes," said Richard Warren, vice president of information services at Judd's, Inc., a large printing company in Strasburg, Va. "It by no means influences what ends up on the paper. It's just the substrate that everyone uses to express the content." □

FOLLOW THE MONEY

Over the past three years, Microsoft has spent about $2 billion in investments and acquisitions:

Company	Product, technology	Investment type	Price	Date
		Tools		
Vermeer Technologies, Inc.	FrontPage, which is now Microsoft's Web page authoring tool	Acquisition	$130M (estimated)	Jan. 1996
EShop, Inc.	Storefront server for electronic commerce	Acquisition	Not disclosed	June 1996
Interse Corp.	Web traffic analysis	Acquisition	Not disclosed	March 1997
MSFDC	To send bills and receive payments electronically	Joint venture with First Data Corp.	Not disclosed	June 1997
		Video/television and Internet convergence		
MSNBC	A television news network linked to an all-news Web site	Joint venture with General Electric Co.'s NBC unit	$420M to get its 50% share	Dec. 1995
VDOnet Corp.	Video streaming	5% stake	Not disclosed	Oct. 1996
Progressive Networks, Inc.	RealAudio and RealVideo streaming	10% stake	Not disclosed	July 1997
WebTV Networks, Inc.	Set-top device for viewing Web pages on TV	Acquisition	$425M	Aug. 1997
VXTreme, Inc.	Video streaming	Acquisition	Not disclosed	Aug. 1997
		Bandwidth		
UUnet Technologies, Inc.*	Internet service	15% stake	$16M	Jan. 1995
Comcast Corp.	Provides access to high-speed data over cable TV wiring	11.5% stake	$1B	June 1997

*Has since been purchased by WorldCom, Inc.

Little expected from Justice review

▶ *Players: 'net too competitive for Microsoft monopoly*

By Mitch Wagner

LIKE A CHEEKY schoolkid who can't keep out of the principal's office, Microsoft Corp. has repeatedly come under the scrutiny of the U.S. Department of Justice for alleged anticompetitive practices.

In the latest round of investigations, the Justice Department last month confirmed that it is examining Microsoft's investments in companies that make real-time audio and video technology for the Internet. Also under the microscope is the software giant's investment in Apple Computer, Inc.

Legal experts and industry observers predicted that the department won't find any wrongdoing on Microsoft's part. There is just too much competition in Internet technology, they said.

"Anytime Microsoft does something significant, there will be enough of an impetus to take a look. But it would take something awfully large for the Justice Department to take action," said Chicago attorney Barry Weiss.

"I also think that Microsoft is aware of what's going on, and they are going to be aggressive and aware of how to fly below the radar," he said.

"I think the only plausible reason for Justice to look into this thing now is for them to accumulate frequent-flier miles."
– Richard Warren, Judd's, Inc.

As long as companies such as Netscape Communications Corp. are competing aggressively with Microsoft, it will be difficult to accuse Microsoft of anticompetitive practices, Weiss said.

"I think the only plausible reason for Justice to look into this thing now is for them to accumulate frequent-flier miles," said Richard Warren, vice president of information services at Judd's, Inc., a large printing company in Strasburg, Va.

APPLE PROTECTION?

The Apple stock is nonvoting and preserves the health of a competitive platform, rather than reducing competition, Warren said. Cynics claim that by investing in Apple, Microsoft buys itself protection from the Justice Department for $150 million.

The department's investigation comes after Microsoft's announcement last month that it would acquire VXtreme, Inc., which makes "streaming" video technology that plays in real time over the Internet.

In October 1996, Microsoft bought a 5% stake in VXtreme competitor VDOnet Corp., and in July 1997, Microsoft acquired a 10% stake in another competitor, Progressive Networks, Inc.

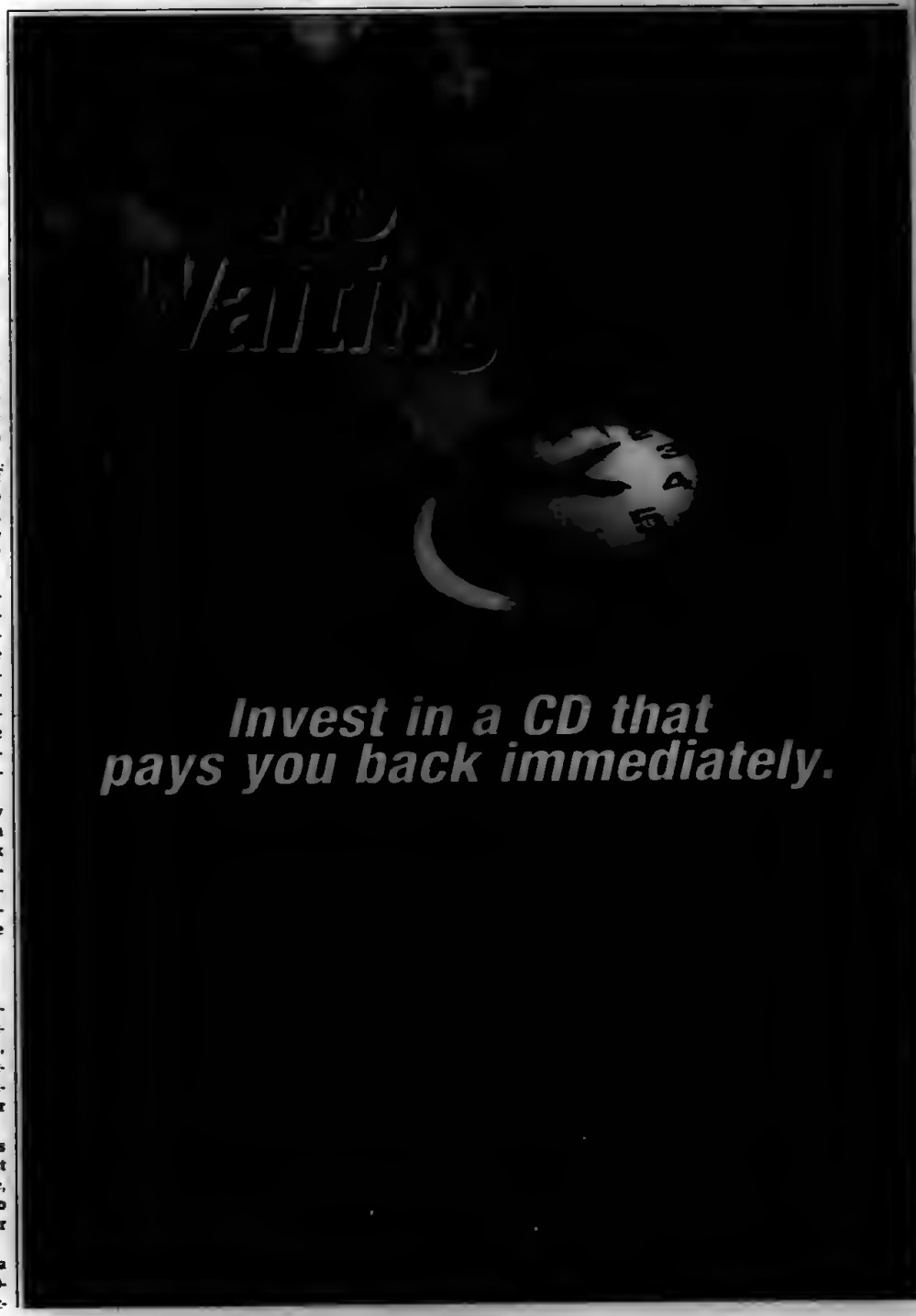
The value of the transactions wasn't disclosed.

Microsoft Senior Vice President James Allchin dismissed the Justice Department's investigation in a conversation with *Computerworld* soon after news of the investigation was disclosed. He said Microsoft isn't involved in running Progressive Networks or VDOnet.

"There are many who compete in the streaming video market outside of us," VDO and Progressive," Allchin said.

Others include Motorola, Inc., IBM and Oracle Corp. According to Warren, the biggest competitor to video on the Internet is video off the Internet — conventional television and video and the emerging high-definition television standard. □

Senior editor Carol Sliwa contributed to this story.



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Insurers struggle to pinpoint ROI

By Thomas Hoffman
New York

INFORMATION SYSTEMS executives claim they are having a tough time quantifying returns on investment (ROI), especially ones that improve overall processes and customer service but don't provide clear cost savings or revenue gains.

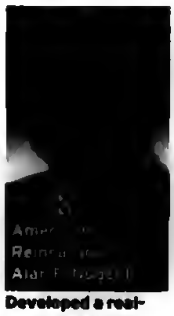
It is a particularly vexing problem in the insurance industry, where many firms replaced their archaic, yet somewhat measurable online transaction processing systems with client/server and electronic commerce-driven platforms.

The move to electronic commerce is driven by customers who are demanding more information on mutual funds and other investment products.

"It's become very difficult to determine what impact these investments are going to have," said Charles G. McCaig, chief information officer at Chubb Group of Insurance Cos. in Warren, N.J., who spoke recently at the Financial Technology Expo conference here.

Chubb is dealing with the problem by investing seed money in small development projects. Once the benefits have been demonstrated, Chubb's IS group requests — and usually receives — more money on a "chunk-by-chunk basis," McCaig said.

McCaig isn't alone. Last year, American Reinsurance Co. established a network-centric computing model that automated the bulk of its underwriters' support work, such as retrieving client files online.



Developed a real-time ROI model to get figures instantly

That effort gave American Reinsurance's underwriters more time to generate new sales, thus contributing to the privately held company's double-digit revenue growth this year, said Alan F. Nugent, senior vice president and CIO at the Princeton, N.J.-based reinsurance giant.

But Nugent has no real way to measure the impact of the project. That is one reason he recently developed a real-time mathematical model for ROI. The model comprises a set of algorithms designed to calculate the anticipated returns on technology investments instantly. "I can't wait six months to check ROI figures," said Nugent, who submitted his ROI measurement model to *The Harvard Business Review* and *The Sloan Business Review* earlier this month for their evaluations.

To be sure, financial benefits from some information technology projects are nearly impossible to measure, such as the impact a mainframe-to-Unix migration in 1995 had on NAC Reinsurance Corp.'s profitability, said John C. Hodge, CIO at the Greenwich, Conn., company.

Other IT projects at NAC are more easily valued, such as its $150,000 investment in image-processing software, which paid for itself in nine months, thanks to faster and less expensive claims processing and document management, Hodge said.

One way for IS to dodge the ROI issue is to place the responsibility on the shoulders of the business unit leaders who own the projects — at least in decentralized organizations.

"It's not my position to justify ROI — that goes back to the business units we're supporting," said David B. Little, CIO at Zurich Kemper Life in Long Grove, Ill.

Chubb is taking a similar approach, McCaig said. "This year, we're doing things a little different and having our business leaders defend" their IT spending plans, he said. □

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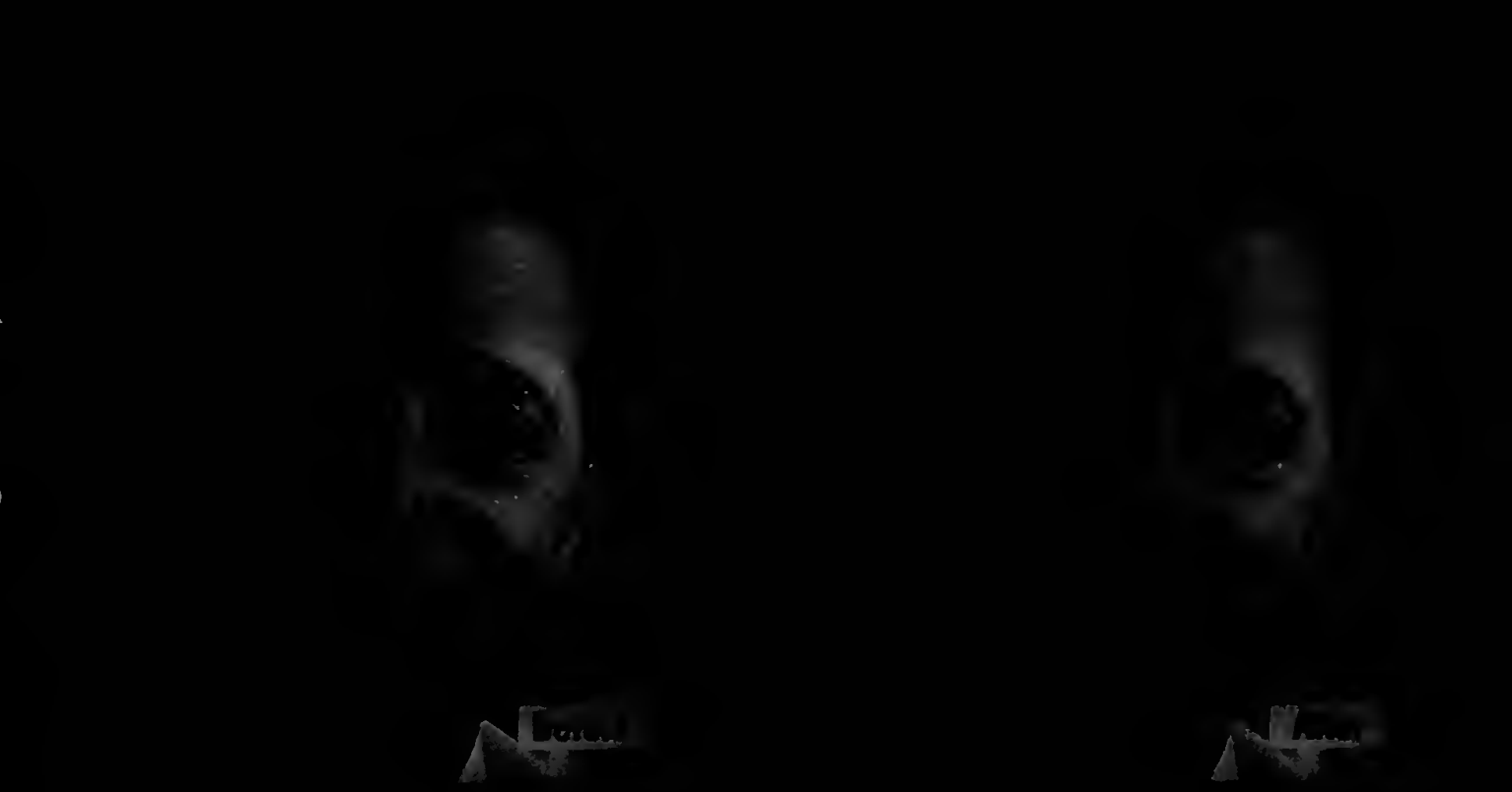

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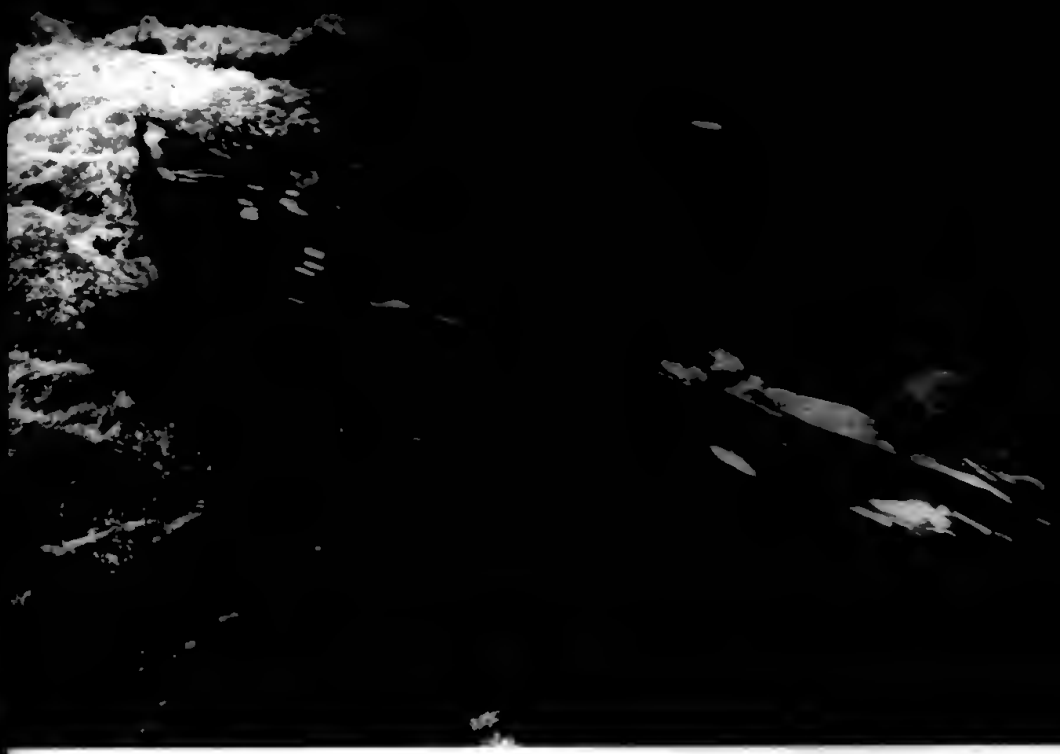

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Web tool tracks software defects

▶ *Distributed groups aided in application development process*

By Gordon Mah Ung

TEAMSHARE, INC., a start-up in Colorado Springs, will release this month what it claims is the first World Wide Web-based tool to help developers track software problems across multiple platforms.

TeamTrack is aimed at companies with distributed teams that need easy, remote access to databases that track defects during the application development process.

MarketScape, Inc., a small multimedia company in Colorado Springs, selected the product and dumped its client/server-based PVCS Tracker system from Intersolv, Inc. in Rockland, Md.

"Three quarters of our development staff are in the office one day a week," said Doug Lemaire, a quality assurance manager at MarketScape. "We wanted something that would be easy to distribute over the Web. TeamShare was really the only game in town."

Lemaire said MarketScape first tried dial-up access to its system, but the performance was abysmal. Although cross-platform issues weren't a problem initially, the company is now developing for Windows and Macintosh. With PVCS Tracker, which features a Windows-only client, access to the database would have been a problem, he said.

"We not only wanted our in-house developers to have access, we wanted our telecommuters to have access, and we wanted our customers to have access."

– Bill Slattery, SkyStream

TeamTrack also gives almost anyone access to the database without the hassle of client-side software. That feature appealed to Bill Slattery, vice president of development at SkyStream Corp. in San Jose, Calif.

"We not only wanted our in-house developers to have access, we wanted our telecommuters to have access, and we wanted our customers to have access," Slattery said.

NT-BASED

The entire TeamTrack system is loaded on a Windows NT-based server and no client software is needed. TeamTrack currently supports Microsoft Corp.'s SQL Server database, but it will support Oracle Corp. databases by year's end.

"I think it's the first product that I've seen to do problem management that's totally Web-centric," said Brendan Conway, an analyst at Gartner Group, Inc. in Stamford, Conn. Conway said TeamShare's competitors are just now putting Web access into their products, but the access is limited to simple tasks.

"[TeamTrack is] all based on Web technology . . . you can get to it anywhere in the globe," Conway said.

He said one problem with TeamTrack is the lack of integration with configuration management tools that some customers are looking for.

Conway also said although TeamShare has a head start, it is only a matter of time before market leaders such as Intersolv and Rational Software Corp. in Santa Clara, Calif., introduce comparable products. □

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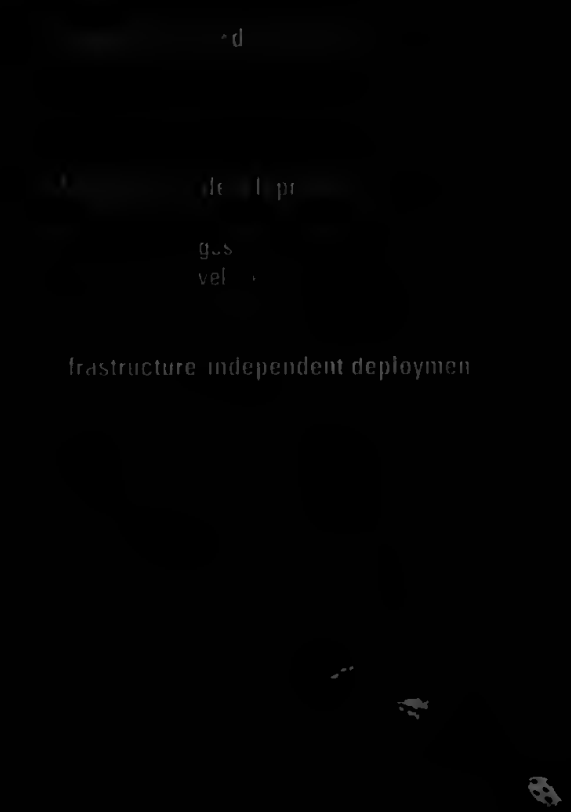

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Tivoli

Config error opens Web gap

By Sharon Machlis and Barb Cole-Gomolski

A COMMON Lotus Domino configuration error has left potentially sensitive administrative files wide open to public view on a number of Web sites, users and security analysts said.

LOTUS DOMINO

The problem isn't a "security hole" in Domino. Instead, the lapse often arises because Lotus Development Corp. ships its Domino software with certain files having networkwide read access, users said.

If administrators don't put access controls on such files, information in log and catalog databases can be viewed by anyone on the Internet. That would give hackers valuable information on where to attack other data on a system. And in some cases, the databases might be set up so that outsiders could enter new information without needing a password.

Because log and catalog file-naming conventions are standard in Domino, those administrative databases are not hard to find, according to an expert at a West Coast security firm who uncovered such lapses across the World Wide Web.

"Access was allowed to files that should have been safeguarded against public access," said the database specialist, who asked not to be identified. The catalog file allows someone to see where all other databases reside on a system.

"We had it available for default read," said Walter Crosby, information services director at Computerworld, Inc., where open access to the files was quickly shut off after the problem was discovered.

Crosby praised Lotus for good Internet security and for noting that documentation recommends access controls for those files on the Web, but he said it was unwise to deliver Web server software with the default option for reading those files.

The problem also can arise because many Notes administrators are accustomed to working with the software on private networks, where it makes sense to keep many database files open, said Michael McGhee, director of administrative computing at the University of Nevada at Las Vegas. Notes clients also require an authentication process that Web clients don't.

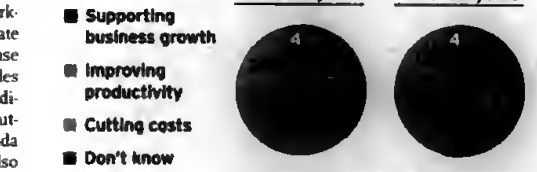
"If you're testing a new app and it's doubling as a Web server, somebody forgets about that and the default is set to read," McGhee said.

Lotus officials said they are familiar with the issue, but that it isn't a problem for most customers. It also isn't unique to Domino, they said. "Go to any Web server, and you can access this kind of information," said Sean Loiselle, Domino product manager at Lotus.

He said if an administrator "sort of skips through an install" it could result in sensitive information on the Web server being available to users outside the company. Still, defaulting to the highest levels of security across the board would create more work for webmasters than Lotus' current approach, he said.

Loiselle said the firm has responded to user concerns by redesigning its Domino documentation and adding a section on Web server security. □

What is the main focus of your IT investments?



Base: 400 executives at U.S. companies with annual sales of at least $200 million

Source: Diamond Technology Partners, Inc., Chicago

Users irked by high software costs

▸ *Mainframe satisfaction grows, but Unix, NT servers take on more work*

By Tim Ouellette

BIG IRON is carrying a larger load than ever, but at the same time users are unhappy with the growing cost of mainframe software and they continue to shift some processing to Unix and Windows NT servers.

Likes NT but keeps critical databases on the mainframe

"IT management realizes they need all categories of hardware to survive today," said Ed Cowger, an analyst at Datapro Information Services Group, Inc. in Delran, N.J. "The battle between PCs, servers and mainframes is over, and now IT has to integrate them."

Datapro recently completed a survey of 421 mainframe shops and found that nearly 40% plan to continue to add mainframe capacity over the next year. On average, they are hooking up more enterprise users (1,239) to the mainframe than ever before (see chart).

But that demand is driving up the cost of the software needed to maintain and run mainframes. In fact, Meta Group, Inc. in Stamford, Conn., expects to see mainframe software prices rise 10% in each of the next few years.

"We are definitely adding capacity," said Gerald Higgins, assistant vice president for data center and network resources at Bell Atlantic Corp. in New York. "But software is now almost more expensive than hardware, and it is becoming more of a concern for us."

Software costs have risen the market has consolidated among a few powerful vendors that provide most of the applications.

And that is one reason users continue to off-load some mainframe work to Unix and Windows NT servers, even though overall user satisfaction with mainframe systems has continued to rise over the past four years.

MIX IT UP

Some users mix the two worlds very well.

At some companies, high-end Unix servers are becoming the de facto mainframes. At the same time, traditional, proprietary mainframes have opened up to support Internet standards and Unix and Windows NT applications themselves.

For example, Wolpoff & Abramson, a bill collection agency in Bethesda, Md., uses a Unisys Corp. Clearpath mainframe that houses both mainframe and Windows NT servers in one box (CW, June 16).

"We may place a purchased database on Windows NT, but for any database we have created and are responsible for, I am not going to put that anywhere near a PC server or Unix," said Don Miller, chief informatin officer at Wolpoff. □

DON'T COUNT OUT MAINFRAMES

Mainframe shops are split over where to place their new applications

Existing mainframes	32%
Unix SMP servers	33%
Windows NT servers	29%
PC LANs	27%

Base: 421 respondents; multiple responses allowed

Source: Datapro Information Services Group, Delran, N.J.

Execs expect IT to drive growth

By Craig Stedman

MORE HIGH-LEVEL executives now expect information technology to help drive business growth, according to a survey released last week. But a lingering question is whether they are ready to translate those thoughts into action.

A majority of the 400 U.S. executives surveyed by Chicago-based consulting firm Diamond Technology Partners, Inc. said the main goal of their future IT investments will be to increase sales. That is a change from the past, when the focus was more on increasing productivity or reducing costs (see chart above).

But Mel Bergstein, Diamond Technology's chairman, said analysis showed that about two-thirds of the survey respondents are still talkers more than doers when it comes to pushing the technology envelope. For example, 30% of the companies surveyed didn't even have a World Wide Web site in place.

"A lot of companies don't want to be pioneers," Bergstein said. "But the truth is that technology can create opportunities that force your whole business strategy to change. The real question is whether companies are really prepared for that."

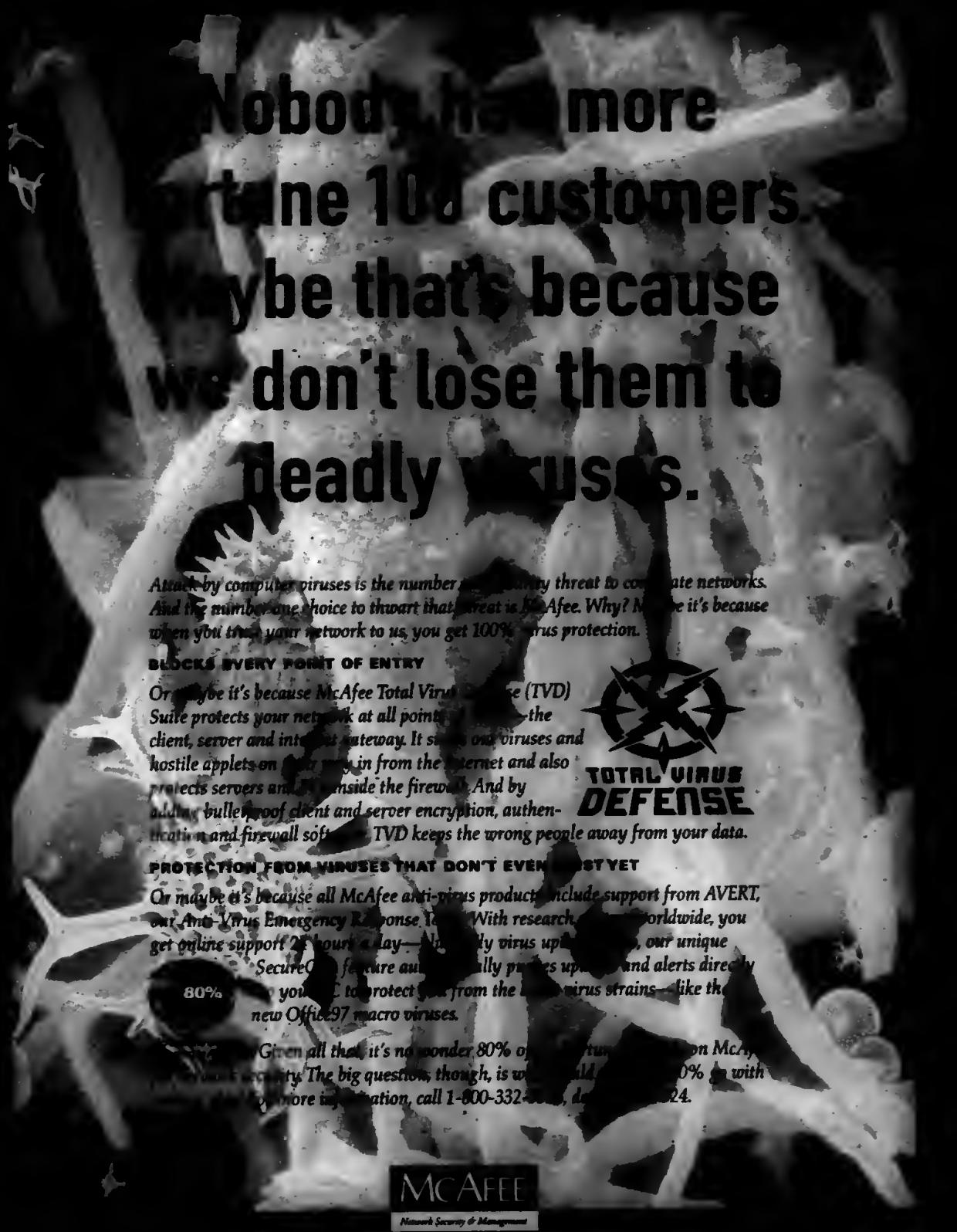
Preparing to pounce on new technology when business needs demand it has become "the single most important agenda item" for IT organizations, said Brian Kilcourse, chief information officer at Longs Drug Stores, Inc. in Walnut Creek, Calif.

"We're positioning ourselves to be risk takers because there can only be one leader," Kilcourse said. "But there is a lot of technology infrastructure work that has to be done to prepare your company to take those risks."

Locked in a pitched battle for market share with other drugstore chains and mass merchandisers, Longs is developing new applications aimed at using information to set the company apart from its rivals. Longs wants to evolve its pharmacies from pure retail outlets to "information distribution points," Kilcourse said.

Using technology to reduce business costs "has become straightforward in many cases," said Alan Levine, director of information services at McCarter Theatre, a performing arts center in Princeton, N.J. "Now a large part of our effort is devoted to how we can use technology to better market ourselves and to open up new sources of revenue."

The theater plans later this year to start up a database-driven Web site that will provide customers with rehearsal updates and personalized pages based on their past purchases. □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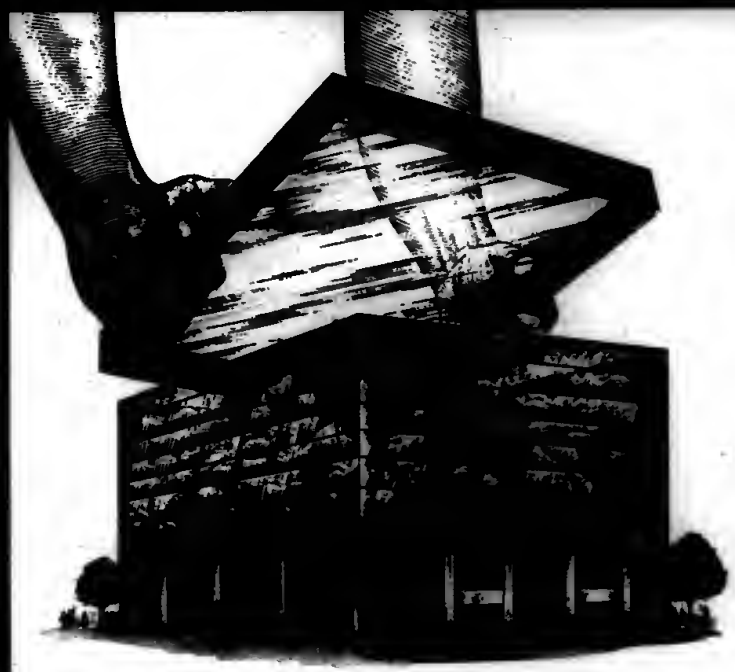

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intel inside

When information is everything

For CIOs, it's time to re-examine data center strategies

Historically, CIOs at large corporations didn't have much of a choice to make when it came to hardware for their data center. The data center was the stable environment, and the platform most often put there to run mission-critical applications was a mainframe. The big question was which MVS-compatible system to purchase.

When the time came to expand the data center computing resource, it was usually accomplished with a forklift upgrade: Out went the old mainframe, in came a new one. Extending the data center was a relatively simple decision — albeit an expensive one.

The decisions today's CIOs face are anything but simple. It's no longer a case of simply saying, "Buy a mainframe," although that option may still be a tempting one, given the mainframe's history of reliability and uptime, worldwide service and support networks, huge redundant DASD farms, proven operating environments, and the full array of software solutions from transaction processing monitors to MRP applications.

Now, CIOs are also charged with transforming their organization's IT infrastructure into part of the solution to drive global competitive advantage. The profusion of options available to make this happen means there are a lot more choices to make, particularly when it comes to what goes inside today's data center — the heart of mission-critical computing. Their mission: Maintain the dependability of the traditional centralized environment while increasing the flexibility and agility of information to help the business succeed.

Distributed solutions move in

Since the "buy another mainframe" days, the centralized computing philosophy epitomized by the mainframe has given way to distributed architectures, many of them based on UNIX. Introduced in 1969, UNIX has since become a viable alternative to MVS-type environments for two key reasons. Its matured reliability and manageability have put it on par with mainframe operating environments. And, unlike more expensive proprietary architectures, the Intel microprocessors as scalable building blocks for high-performance systems, provide an affordable robust platform for the data center.

Decision makers controlling some of today's largest data centers have chosen Intel architecture (IA)-based servers running 8, 16, 32 or more Pentium® Pro processors and UNIX to handle huge transaction loads and databases. And, just to keep things interesting, Windows NT is making significant inroads into business-critical environments, further accelerating the price/performance sea change in corporate computing.

Just because faster-cheaper-better technology has arrived on the scene

Continued on p. 7

When it comes to selecting a data center solution, headroom is a key criteria.

ILLUSTRATIONS BY CHRISTOPHER RING

For securities regulator NASD, true security lies in scalability

The National Association of Securities Dealers (NASD) is the largest securities industry self-regulatory organization in the U.S., with 5,000 membet firms, 58,000 branch offices and 500,000 registered representatives. The organization stores and manipulates daily data on the NASDAQ exchange and provides Web access to this information, including current stock quotations. For this, it needs a lot of processing power.

NASD had been deploying its broker databases and services on SMP systems. But when it realized that traditional SMP systems could not support enough storage, memory or computational horsepower for a new market data application it was rolling out, it began evaluating non-uniform memory access (NUMA) architecture systems.

NASD was interested in NUMA because the architecture is designed for scalability. NUMA allows servers to be easily added and linked within clusters. It also allows them to act as hot backups for each other.

For the processing-intensive tasks mentioned above, as well as managing a 1TB (and growing) data warehouse, NASD originally planned to purchase two NUMA systems. But in the end, it decided to buy only one: a Sequent Computer Systems NUMA-Q™ 2000 server.

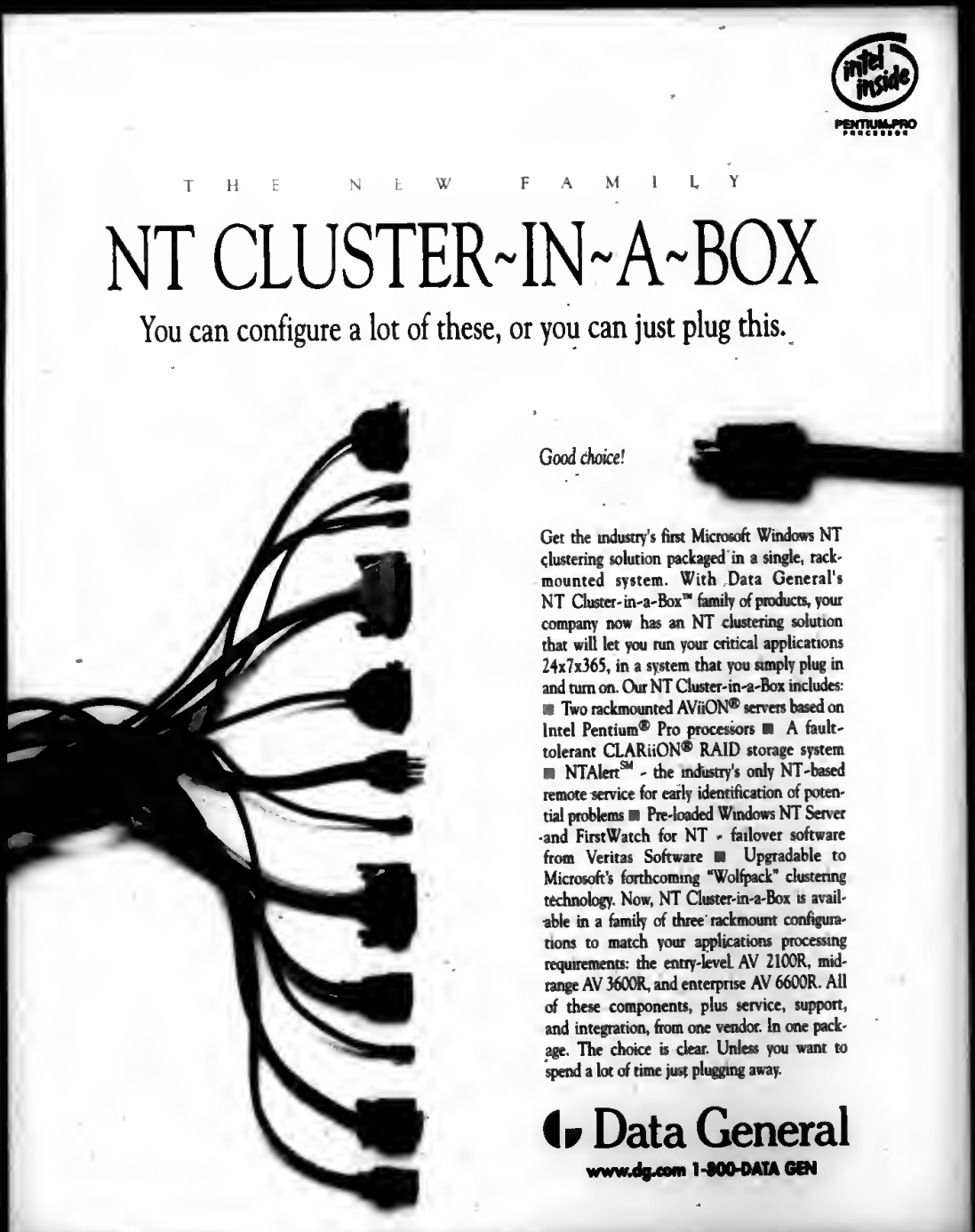
The reason the company needed to buy only one was the scalability of the NUMA system. The servet can scale to 252 200MHz Intel Pentium® Pro processors and possesses a nearly infinite capacity to accommodate soaring disk storage.

NASD chose a system from Sequent. "The real benefit Sequent provides us is their high availability," says Sam Loughery, vice president, NASD production services. "You can fail one node over to another or have a Sequent node designated as a backup for certain applications." In addition, the organization had been a Sequent user for four years, and had migrated many of its legacy applications to the Sequent environment.

The NASD system is a two-node cluster system that supports up to 16 processors per node. But the ability to add Intel processors and meet growing storage needs is the major benefit of the NUMA-Q 2000, according to Loughery. "We have the capacity to support whatever comes along," he says. "We can have a 100-processor NUMA-Q 2000 and partition it into two different systems. We can mix and match any way we want."

What's come along so far is a 12-processor configuration that supports nearly 4.5TB of storage on devices from EMC Corp. This data is managed by an Oracle RDBMS and is made available 24 hours per day.

Some critics question the true scalability of the NUMA architecture. In response, Loughery says NASD will push that envelope later this year when it expands the server further. Since, aside from a few minor and quickly corrected hardware problems, the server has performed flawlessly so far, Loughery is comfortable with the prospect of scaling the server. "We're confident it will work as advertised," he says.



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Union Pacific gets on track with NCR WorldMark server

Even if it weren't facing stiff competition from the trucking industry, Union Pacific (UP) Railroad would be like any other major corporation in today's harsh business environment: It has to eliminate as much operating inefficiency as possible.

In September 1996, UP realized that migrating from its NCR 3600 server to a new platform would allow it to continue to consolidate hundreds of disparate databases, which were being used by different departments and which had resulted in redundant and often-conflicting information. The platform it selected was an NCR WorldMark ™ 5100M enterprise server, a massively parallel processing (MPP) system.

"Our data warehouse environment was growing very rapidly," says Betty Kight, senior manager of systems development at UP's information services division. The data warehouse is housed in the St. Louis data center. (The other data center is in Omaha, Neb., where UP is headquartered.) Data center operations was already responsible for the daily operations of the NCR 3600 system, which used the Teradata RDBMS. But the rapid growth of the environment required a larger and more scalable system.

Even at the start, Union Pacific was aware that the data warehouse was going to have to support a very large database environment. Currently, the NCR 5100 has 1TB of data, consisting of accounts payable, equipment maintenance, marketing, and car and locomotive movement information. Furthermore, this information needed to be easily accessed by many users. Today, there are more than 2,400 users on the 5100.

Union Pacific has installed three 5100Ms, one for testing, one for development and one for production. The production system is a 16-node WorldMark, with four Intel processors per node, for a total of 64 processors. "With the 5100M, there's more flexibility for adding nodes," Kight said. "To add capacity on the 3600 you had to add processing power in order to retain the same performance. On the 5100M you can add nodes or CPU capacity independently of one another." UP is currently in the planning and budgeting process for 1998 capacity, she notes.

Because both the 3600 and 5100M were Intel-based and both ran Teradata, UP was able to move its data to the new platform relatively easily. The migration period began in the fall of 1996. Much preparation work was required, but in the end, Kight says, "We were down less than an hour." And, by moving from one IA-based system to another, UP managed to leverage the expertise that it had already acquired. "We avoided support costs and everything else that goes along with changing an architecture," Kight said.

By using the 5100M, UP realized many benefits, but the most significant was in availability. "The 5100's new availability features, including RAID5 and redundant MPP interconnect, have substantially increased availability, and we have realized dramatic improvements both in scheduled and unscheduled downtime," says Kight.

Continued from p. 3

doesn't mean that companies can afford to throw out what they have. However, this change is causing organizations to re-examine their mainframe-in-the-data-center strategies. Many are putting new or re-engineered applications on distributed UNIX or Windows NT platforms. They're keeping their mainframe, but using it for a different purpose. "Mainframes will be around for years, but their use will be primarily as database or very-high-rate transaction servers," says Norton Greenfield, who heads Implements, Inc., a Wayland, Mass. consulting firm.

Continued on p. 11

DECADES AGO, GORDON MOORE PREDICTED PROCESSOR PERFORMANCE WOULD DOUBLE EVERY TWO YEARS. SO FAR, THIS PREDICTION HAS PROVEN AMAZINGLY ACCURATE.

Inside much more than PCs

Although the ubiquitous "Intel Inside®" advertising campaign has linked Intel microprocessor technology with personal computers, the Intel architecture (IA) has a long history of meeting companies' high-end computing requirements as well.

In 1981, an El Segundo, Calif., company called Teradata began deploying Intel 8086-based mission-critical solutions in the data center in the form of a mainframe operating environment. (Teradata was acquired by NCR in 1992.) In 1983, Sequent Computer Systems was formed in Beaverton, Ore., to take the Intel 386™ microprocessor into commercial SMP systems. These seminal events opened the glass house to IA.

In 1995, Intel announced the Pentium® Pro processor, which continued IA's push into enterprise computing. Today companies such as Data General, NCR and Unisys, which once built systems around proprietary RISC processors, design their enterprise servers around the Intel architecture. These are just three of the many systems makers that have committed to the Pentium Pro processor for building high-end systems. Another convert, Fujitsu ICL, already ships an IA-based mainframe and plans to move the rest of its products to IA as well.

Hardware and software suppliers continue to build on the Intel engine. One key capability of the Pentium Pro processor — the ability to address more than 4GB of memory — is being exploited by high-end server manufacturers such as Data General and Sequent. This feature is critical for large database and multi-user line-of-business applications, because being able to address more memory translates almost directly into better online performance for users.

"Being able to go above 4GB to the 64GB addressability that 36 bits gives you allows us to provide a much more balanced system," says Gordon Haff, product manager of enterprise servers at Data General. "If we could only go to 4GB, with our 32 Pentium Pro processors, we would not be able to get the most out of those systems in key database applications."

Haff notes that 36-bit addressability is a capability of the Pentium Pro processor "from a hardware point of view," but it is implemented in Data General's servers because "we have the operating system support for it."

Sequent, too, takes advantage of greater than 4GB memory addressability and will also incorporate Intel's newest and most powerful Pentium Pro processor — with a full megabyte of on-chip cache memory — into its NUMA-Q data center servers.

"For performance-intensive applications, doubling the amount of cache memory on the processor will mean a significant performance enhancement," says Jeff Pancottine, vice president of marketing with Sequent. "The larger cache feeds the processor, so you're sure of getting every ounce of performance available for your applications."

Systems makers that have chosen the rapidly evolving Intel microprocessor as their silicon engine can not only deliver highly capable solutions today, they also have a leg up to meet their customers' demands for even more computing power tomorrow. As new members of the Intel architecture family appear, leading systems suppliers will take these engines and deliver even more powerful solutions.

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Intel-based AViiON servers provide cure for hospital's info access woes

Based in Nashville, Tenn., Columbia/HCA Healthcare Corp. is a $20 billion organization that, through mergers and acquisitions, has grown to the seventh largest employer in the U.S. Columbia/HCA currently consists of 340 hospitals, 500 home health care agencies and 200 surgery centers in 36 U.S. states and three countries.

Columbia/HCA still uses an IBM mainframe to run legacy applications such as general ledger, payroll and patient billing. But the corporation realized that, to improve information access and trim systems management costs, it needed to standardize its hardware and software. To execute that strategy, it has turned to AViiON® servers from Data General (DG) which are built around Intel processors. The organization runs four mission-critical applications on these systems.

The first was consolidating their E-mail systems. Columbia started with 15 now has just three. (In time only Microsoft Exchange will be used.) The trimmed down system runs on two AViiON servers, an AV 3600 and an AV 2100. Each is based on Intel 200MHz Pentium® Pro processors. Columbia now is rolling out 30,000 more Exchange seats in the next 18 months. This will require 30 additional AV 3600 servers.

Columbia also moved its Internet and intranet applications to an AViiON NT Cluster-in-a-Box. This configuration consists of two dual-processor DG AV 3600 servers in a single cabinet, running Microsoft Internet Server.

The cooperative effort between DG, Intel, Microsoft and Columbia was "key to the decision to move our Internet platform," says Kathy Markham, vice president of planning and architecture at Columbia Information Systems, a subsidiary of Columbia/HCA. "We were driven by the long-term viability of the system we were buying, so we were committed to using Intel. Intel is a strategic move for new enterprise systems."

That strategy is apparent in the third mission-critical application: providing medical records for the physicians' practices component of Columbia. This application previously ran on DG RISC systems based on a Motorola 88000, but a required software upgrade prompted the decision to move the application to the new strategic platform. It now runs on a multiprocessor Pentium Pro processor-based AV 5900 Enterprise Server in Columbia's central office, plus an AV 5900 in each of seven regional data centers.

The fourth mission-critical application is a data warehouse Columbia will run off a 6-way Pentium Pro-based AV 6600. Markham expects the warehouse to be implemented in early 1998, initially with less than a terabyte of data, but growing to several terabytes.

Although Columbia keeps summary-level patient data on the mainframe, clinical and financial details and discrete item charges are kept at the data center. A data warehouse, notes Markham, will allow Columbia "to roll up these details from a clinical and financial perspective to do more detailed analysis, in order to determine best practices for certain treatments with the lowest cost."

Continued from p 7

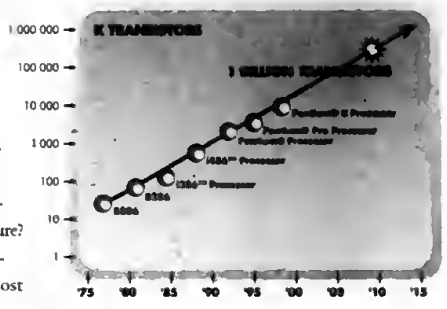
The new data center, which is based on market-driven, standards-based technologies, will take advantage of the advances in distributed technology and vastly improved price/performance, to help IT contribute to achieving competitive advantage.

For CIOs, some major questions remain. How do we find the right mix of technologies and skills so the organization can improve its flexibility and agility? How do we use the mainframe for maximum benefit? Do we deploy UNIX-based systems for departmental and line-of-business applications? And what role should NT have today and in the future?

The answer for many leading organizations has been Intel architecture-based solutions. These enterprise systems have been selected to host mission-critical applications such as data warehouses, decision support systems, OLTP and multi-tier line-of-business applications like SAP R/3. The list of organizations running their data centers on IA reads like a Who's Who of Big Business. Bridgestone Corp., Columbia/HCA, Hallmark Cards, The National Association of Securities Dealers, Reuters, Union Pacific Railroad and Wal-Mart are just a few of the many organizations that have already adopted this new, agile data center computing model.

At information provider Reuters, more than 50,000 users rely on an IA-based solution for access to up-to-the-minute data. Wal-Mart is supporting a data warehouse of more than 24 terabytes of data. A major financial institution in the U.K. is processing more than 25,000 transactions per second.

Transistor Count Continues to Follow Moore's Law



Source: Intel

Power is good

History has taught us that the need for additional processing power is insatiable. The industry is now focusing on taking the basic technology building block — the Intel microprocessor — and constructing even more scalable servers with it. And CIOs are looking to server manufacturers for the next power platform beyond large-system SMP.

There are two ways to implement scalability in a server. You can add more processors in the same box (today's SMP model) or you can link individual boxes together (clustering). In the mainframe and minicomputer arena, clustering has proven itself over time. Both SMP and clustering designs are widely available in highly scalable IA-based servers. As critical applications are deployed on these servers, the two features that clustering provides — scalability and high availability — continue to be must-haves before a CIO is willing to sign off any purchase agreement.

Another criteria for selecting a data center solution is headroom: the system's ability to meet the company's evolving computing needs over time. Companies have always pushed the limits of their computing resources, and they will continue to do so in the future. Every significant corporate computing trend of the past decade — LANs, client/server computing and the

Continued on p 12

Headroom is the ability of a system to meet a company's evolving computing needs over time.

Continued from p 11

Internet — has required more processing power and more bandwidth. Can a processor architecture whose roots are in the PC meet this continuing performance challenge?

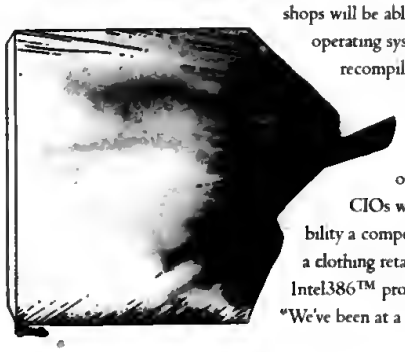
Moore's Law delivers

In 1965, Intel co-founder Gordon Moore made a prediction now known as "Moore's Law." It posits that transistor density on microprocessors will double every 18 months and so far, it has proven amazingly accurate (see graph on previous page). Processor performance follows this curve closely, doubling roughly every 24 months. As this trend is forecast to continue, by 2011, Intel processors will contain one billion transistors and will deliver around 100,000 MIPS (millions of instructions per second). What this means is that as demand for performance accelerates, the Intel architecture will continue to evolve to deliver the next step in computing power.

The current platform for delivering this power is Intel's IA-32 family of processors, which includes the Pentium Pro and Pentium II processors. It gives IT professionals everything they need today — a complete set of resources to build, use and manage a mission-critical computing function. Intel is committed to advancing the IA-32 architecture to provide the foundation for data center solutions as performance needs increase.

And Intel is already at work developing a complete solution set to expand the Intel architecture family with a new, next-generation architecture — IA-64 — for servers and workstations. The first processor in the IA-64 product family is code-named Merced. From the outset Intel's Merced design team set a challenging goal: To design a highly scalable processor that will handle any enterprise application. It must achieve world-class levels of performance, while remaining compatible with the thousands of applications running on IA-32. At this time, the Merced team is working on completing the processor design and preparing state-of-the-art manufacturing facilities to build the new chip.

Companies have always pushed the limits of their computing resources . . .



Being able to support legacy IA-32 applications is crucial for cost-effective implementation of Merced processor-based enterprise servers. IT shops around the world have a huge investment in custom-developed, as well as purchased, enterprise application packages. Merced is designed to protect users' investment in both software and training. IT shops will be able to run the full complement of today's IA-32-based software, from operating systems to applications, on Merced processor-based systems without recompilation, and without software emulation or translation. They can then selectively choose recompiled applications in order to get the greatest performance increase out of the blazingly fast new processor. This twin benefit of software compatibility and improved performance has played out before for IT shops standardizing on the Intel architecture.

CIOs who are familiar with IA are finding this long-term architectural compatibility a compelling reason to select IA-based solutions today. Burlington Coat Factory, a clothing retailer in Burlington, N.H., started off using systems based on the Intel386™ processor; now it uses Sequent servers based on the Pentium Pro processor. "We've been at a continuous stream of binary-compatible hardware upgrades with Intel

processors," says CIO Mike Prince. "In the future, as technology unfolds, the Intel architecture underneath will give us the opportunity to see further improvement in processor capacity without any migration problems." At Columbia/HCA, future growth was also a factor in choosing the Intel architecture. "We were driven by the long-term viability of the system we were buying," says Kathy Markham, vice president of planning and architecture.

Intel isn't the only company committed to the future development of the Intel architecture. Leading software developers and systems manufacturers are already developing hardware and software to take advantage of the coming wave. Baan, Microsoft, Oracle, the Santa Cruz Operation, SAP and SAS Institute have already announced plans to include

Continued on p. 14

INTEL'S MERCED DESIGN TEAM SET A CHALLENGING GOAL: TO DESIGN A HIGHLY SCALABLE PROCESSOR THAT WILL HANDLE ANY ENTERPRISE APPLICATION.

NUMA: a new approach to scalability takes hold

Computer architectures have evolved steadily. The newest architecture, cache-coherent non-uniform memory access (NUMA) technology, is tackling mission-critical, data center-class applications by blending massively parallel processing (MPP) horsepower with symmetric multiprocessing (SMP) ease of programming, systems management and scalability. NUMA technology lets vendors cost-effectively tie processors together in configurations, a scalability required for OLTP and database applications.

A NUMA system is built from a collection of "metanodes," linked by a high-speed interconnect. Each metanode consists of one or more processors in a classic SMP architecture. The main difference between NUMA and MPP systems is the speed of the interconnect between processors or metanodes.

Sequent Computer Systems and Data General (DG) are among the first companies to deliver NUMA-based systems aimed at the data center. Sequent's NUMA-Q™ 2000 and DG's AViiON™ 20000 families bring new levels of scalability to enterprise environments. DG's NUMA machines tie 32 Pentium Pro processors in a configuration capable of supporting 32GB of memory and 100TB of storage.

"Mainframes are past their prime," says Casey Powell, chairman and CEO of Sequent. "We've delivered NUMA-Q 2000 to extend the power and affordability of SMP into the data center . . . but at a fraction of the mainframe cost." Entry-level NUMA-Q 2000 servers start at $242,000, and customers testing the systems have seen performance gains. "These systems scorch," says Mike Prince, CIO at Burlington Coat Factory, a Burlington, N.H. clothing retailer that has just installed three NUMA-Q 2000s.

The NUMA-Q 2000 family is also binary compatible with the company's Symmetry 5000 SMP servers, preserving investments in application software. Customers can even mix Symmetry and NUMA-Q 2000 nodes in the same cluster.

Customers using the AViiON 20000 in such applications include GE Retail Systems, which uses an AV-20000 in a full production commercial data center type of environment, and Sainsbury's, the largest grocer in the United Kingdom. Sainsbury's is using the system for a one 1TB data warehouse application (that it plans to extend to 3TB). Although a data warehouse is not a traditional OLTP application, in this case the warehouse was mission-critical to Sainsbury's, notes Gordon Haff, product manager for enterprise servers at Data General, because the ability to access and analyze vast amounts of data from their cash registers is an essential ingredient to their success.

Another customer using the NUMA-Q 2000 is the National Association of Securities Dealers (NASD). The securities self-regulatory organization currently runs a 12-processor NUMA-Q 2000 system with 4.5TB of disk storage, but plans to expand the server even further as its data warehouse and its needs for processing power continue to grow.

Santa Cruz Operation, SAP and SAS Institute have already announced plans to include support for Intel's IA-64 architecture at launch. Top manufacturers like Compaq, Hewlett-Packard, Hitachi, ICL, NeTpower, Sequent, Siemens-Nixdorf and Unisys have also committed to building high-performance systems based on Merced technology.

However, the coming Merced processor does not mean that Intel will stop advancing IA-32. Both processor families will co-exist, powering data center solutions. Intel is investing millions of dollars for new IA-32 processors, meaning that the proven IA-32 architecture will continue to deliver solutions for business-critical computing for years to come.

Mainframe-class reliability and manageability

There is broad industry acceptance of the Intel architecture's impressive performance and cost advantage. But many doubt these distributed servers can match the mainframe's levels of reliability and manageability.

The good news is, today's high-end IA-based systems have reliability and manageability features that rival or surpass those of mainframes. Sophisticated fail-over mechanisms, redundancy, mirrored disk drives, clustering and other technologies borrowed and refined from mainframe computing give these new systems world-class reliability.

Where manageability is concerned, virtually all high-end IA-based systems today offer sophisticated features for account management, disk backup, printer and terminal support, inter-system communication, configuration management, database monitoring and other critical functions. Management software typically feeds into SNMP software suites in use in other areas of the company. Although these systems feature many processors, suppliers have taken pains to ensure that management is as simple as single-node systems.

With the advent of the Pentium Pro processor, the Intel architecture has arrived in the data center in a big way. Systems suppliers are taking advantage of the built-in multiprocessing capabilities of these chips to link dozens or even hundreds of them into high-performance, scalable systems. These systems are in full production today and are already handling some of the largest transaction loads and databases on the planet.

. . .and they will continue to do so in the future.

This new class of systems provides all the performance and reliability of mainframes with the added features of flexibility, agility, affordability and scalability. This more unified processor architecture causes purchase costs, support costs, software development costs and management complexity to go down, and reliability to go up.

"By staying with the Intel architecture, we avoided support costs and everything that goes along with changing an architecture," says Betty Kight, senior manager of systems development at the information services division of Union Pacific Railroad.

More important than cost savings, IA-based solutions are improving companies' ability to adapt to changing business priorities. This more flexible IT infrastructure gives organizations the agility they need to respond to fast-changing

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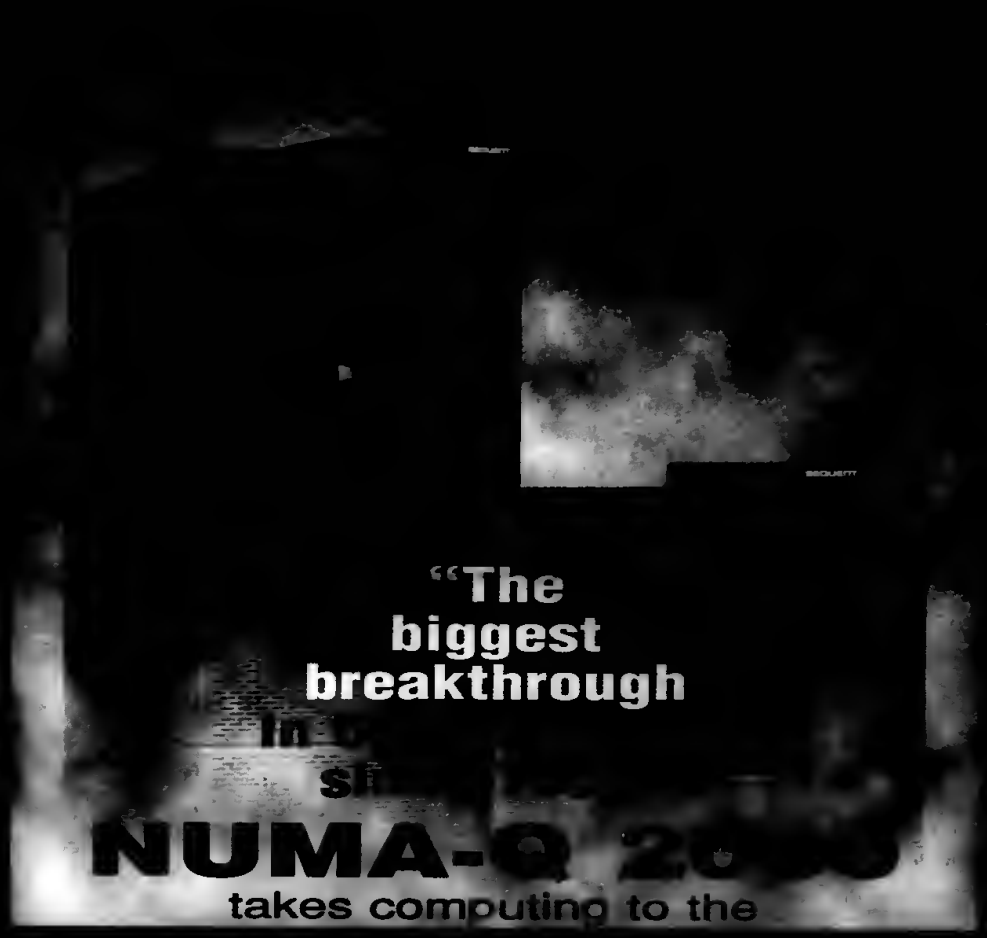
NCR

Transactions in the Age of the Consumer

L. Merill Bryan, Jr.,
Senior Vice President,
Information Technologies,
Union Pacific

intel inside



SEQUENT

Computer Industry

Tivoli sets off on suite path

▸ *Unison acquisition plugs job scheduling gap; users worry about support*

By Patrick Dryden

TIVOLI SYSTEMS, INC.'S desire to build proven job scheduling software in to its enterprise management framework by acquiring Unison Software, Inc. concerns some users and analysts — despite the gap the deal will fill.

IBM's management software division announced plans last week to acquire partner and market leader Unison in Santa Clara, Calif., for about $170 million.

The goal is to integrate the core of Unison's Maestro distributed job scheduler, as well as upcoming tools to manage output from diverse systems, with Tivoli's TME 10 enterprise management suite.

That would let users and other vendors take advantage of the embedded functions.

Users such as Sabre Technologies Solutions rely on a job scheduler to coordinate tasks running on multiple platforms.

In an airline yield management application, for example, Maestro gathers data from various flight reservations systems, consolidates it, then reports it in time for agents to sell more seats — thereby boosting revenue as much as 3% annually.

IMPROVED SUPPORT

The acquisition could improve Unison's weak support internationally, but it isn't entirely good news, said Gayle Waitman, a planning manager at the Sabre development group in Fort Worth, Texas.

"Usually, products don't stay the same after an acquisition. As a backup, we'll consider other schedulers, so we don't have to support something that's getting away from our specific needs," Waitman said.

Distributed job schedulers are available from small vendors such as Vinzant, Inc. to leaders such as Computer Associates International, Inc., New Dimension Software Ltd. and Platinum Technology, Inc.

"Usually, products don't stay the same after an acquisition. As a backup, we'll consider other schedulers."
– Gayle Waitman, Sabre Technologies Solutions

The acquisition, which should be approved within 45 to 90 days, "should have no impact at all on the current Maestro installed base," said Tivoli CEO Frank Moss. "We'll continue to evolve Maestro and seek new stand-alone customers, as well as use it to attract users to TME 10."

Tivoli's planned integration of Maestro functions should help TME 10 compete with Unicenter TNG from rival CA in Islandia, N.Y., according to analysts.

CA's suite includes job scheduling and other tools. TME 10 offers a framework for users to plug in what they want.

IN A CORNER?

But this deal "raises concern about the whole Tivoli business model based on independence," said Paul Mason, an analyst at International Data Corp. in Framingham, Mass. "Once Tivoli starts down this path, [it] may have to acquire more key tools and wind up building a suite that locks in users and locks out other partners," he said.

Playing favorite among traditional partners may adversely affect Austin, Texas-based Tivoli's relations with vendors that support TME 10, said Herb VanHook, an analyst at Meta Group, Inc. in Westport, Conn. "Eyebrows are raised," VanHook said. "Next, we believe Tivoli will acquire a help desk vendor." □

Gateway opens door to reseller market

By April Jacobs

HOPING TO GAIN quicker access to the high-end corporate market, direct seller Gateway 2000, Inc. dipped its toe into the channel waters last week shortly after purchasing ALR, Inc. That leaves Dell Computer Corp. alone in its direct-sell model.

The North Sioux City, S.D., company said it will enter into relationships with value-added resellers (VAR) as it prepares to ship workstations that target corporate users next month. The company recently announced plans to sell PCs, servers and portables to the corporate market.

Source: Morris Information Services, Inc., Palo Alto, Calif.

Gateway announced in July it would sell servers with Irvine, Calif.-based ALR through established channels. ALR also has a line of workstations and desktop PCs.

Gateway said it will be able to offer customers a wider range of purchasing options — and service — by going through established channels in addition to its own sales and service force.

CORPORATE MOVE

Analysts said the move will help Gateway move into the corporate realm and assist it in selling higher-end servers and workstations.

"As you get into the higher end, particularly in the workstation area, the sell is more of a software sell, with a lot of [computer-aided design] users and vertical markets like architecture, engineering, design and medical users," said Roger Kay, an analyst at International Data Corp. in Framingham, Mass.

"And all of that requires more hand-holding, which is something the VARs do, and is more involved than the box sales the direct guys like Dell and Gateway tend to do," Kay said.

Kay said all direct vendors have faced challenges in providing complex integration and installation — mainly because they traditionally haven't formed the extensive software partnerships that resellers have. That is especially true in the vertical markets, where specialized knowledge is important. □

& PCs gain features as prices fall an average of $46 per desktop. Page 77

Jobs' interim post muddies Apple waters

By Kim Girard

STEVE JOBS' appointment last week as Apple Computer, Inc.'s interim CEO should make it even harder for the struggling computer maker to lure a top-flight permanent replacement, analysts said.

"Apple will have to go down a level or two levels to get someone to take the job," said Steve Dube, an analyst at Wasserstein Perella Securities in New York, noting that Jobs already made several key decisions in recent weeks.

POLICY CHANGES

As a board member and de facto CEO, Jobs reversed the company's policy of licensing Apple technology to clone makers, changed employee benefits and brought the Newton handheld device back into the corporate fold.

Ken Lim, a Cupertino, Calif.-based Apple analyst and editor of "Cyber Media 2001," said he expects Jobs will be named permanent CEO within three months.

"They'll continue to pay lip service to finding another CEO, but the real winner in this is the headhunter firm," Lim said. "They'll get paid no matter what."

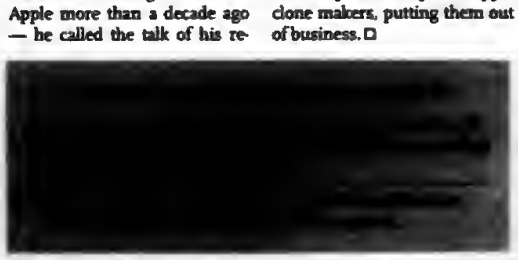
Others said Jobs has no intent to leave his current job to be permanent Apple CEO, saying it would be an embarrassment if he did so.

In an electronic-mail message recently sent to colleagues at Pixar Corp. — which Jobs founded after being ousted from Apple more than a decade ago — he called the talk of his return as CEO "crazy rumors" and said he had no plans to leave Pixar.

Apple's board isn't expecting to name a new CEO until year's end.

In other Apple happenings, Guerrino De Luca, executive vice president of marketing, resigned in "a personal decision," that he said was unrelated to Apple's prospects.

Also Exponential Technologies in San Jose, Calif., is suing Apple for fraud and breach of contract, claiming Apple made it impossible for them to sell their superfast chips to Apple clone makers, putting them out of business. □



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intel inside pentium

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OPINION

Bottoms up! If you're an IS manager batting around the idea of asking your boss for a few million bucks for a data warehouse, hold that thought.

The data warehouse is under siege. And the attacks are coming from within the community of data warehouse vendors, consultants and analysts.

Last year, everybody was pushing data warehousing as a way for companies to gather priceless information about their customers and turn it into more effective sales and marketing campaigns.

Let's say a bank had a customer with a car loan, savings account, checking account, mortgage and maybe some CDs. What if that bank could consolidate all those individual databases into one comprehensive view of that customer?

And what if the bank could then approach that customer and say, "Hey, we noticed your Grand Cherokee will be paid off in two months, and it just so happens that mortgage rates are real low right now. How about refinancing that Dutch colonial you bought six years ago at 9.25%?"

It sounded terrific. Unfortunately, building a classic, galactic, enterprisewide, terabyte-crunching data warehouse proved an overwhelming task. It took too long (18 months to two years) and cost too much (several million dollars). By the time the warehouse was ready for business, the business had moved on to more pressing needs.

To make matters worse, impatient power users all over your company are firing up their own little rogue data marts. And they're already showing results (check out this week's Buyer's Guide for "Data Mart Dynamics" on page 99).

The winds are clearly shifting toward the quick and tactical data mart. That isn't to say the data warehouse is dead; in fact, it's still the ultimate goal.

But the bottoms-up approach of building a warehouse by stacking marts on top of one another seems to be gaining the upper hand.

Neal Weinberg

Neal Weinberg, Assistant news editor
Internet: neal_weinberg@cw.com

YOU'RE ABSOLUTELY CERTAIN THIS WILL HELP US RETAIN OUR IS PEOPLE?
YES, SIR, AND DON'T WORRY, SIR, IT'S THE MARKETING DEPARTMENT'S TURN NEXT WEEK.
FRIDAY DUNK TANK
DUNK THE CIO
IS people line up here

LETTERS

Year 2000 problem ranges from circus to conspiracy

COMPUTERWORLD'S Frank Hayes said it well in his column on the year 2000. ["Year 2000: a regular laff riot," CW, Aug. 4). Too bad he's right. It's a circus already, complete with sideshows. As for Java, both JScript and JavaScript have century date problems of their own. And the lawsuits are beginning.

A supposed AP wire story forwarded to me said an Atlanta-based company was being sued by a Michigan company for century date problems with a [point-of-sale] system. But look at the bright side. Ideas for columns should be pretty easy to come by.

Leon A. Kappelman, Ph.D. co-chair, Society for Information Management's Year 2000 Working Group
Denton, Texas
kapp@unt.edu

Understand software safety

WHAT YOU REPORTED in your July 7 cover story ["Killer apps"] is true. Most management doesn't really understand about software safety. They will say "only build me a safe device," but then all the other management actions prevalent on most software projects (schedule pressures, reduced design/code reviews, cutbacks in testing time and so on) take hold and run counter to what they just told you.

Also, a lot of software developers don't realize how different this type of software is, and they are not very well-trained in hazard and fault analysis. I'm glad to see this type of article raising some awareness of these issues.

Ron Summers
Olathe, Kan.

FRANK HAYES' column about the year 2000 bug was terrific and right on target. I feel exactly the same way. I am an independent webmaster and computer consultant in Indianapolis, and I often hear talk about this problem among my clients.

The idea that seems to enthrall people the most is the conspiracy theory that evil IS professionals in the early days of mainframe computing knowingly created this "bug" in an effort to not only keep themselves in a job, but also to extort millions of dollars from the business computing community upon hearing that all of their applications would blow up in 2000.

The embrace of this idea shows that most people don't know anything about systems development or the real root of the problem. And some people are all too ready to accept lies or scandal as the cause of any problem.

Brandon Rogers
Indianapolis

Requirements beat specs

WHEN "CONFORMANCE to requirements" is conveniently redefined as "adherence to specifications," software quality is repudiated [CW, Aug. 18 Special Report]. Spec-driven quality is easy to administer — too easy. Most software disease stems from a spec's failure to cover requirements (real users' true needs). Quality gets built in at the spec development stage. The program is merely final detailed specification. If it doesn't meet user requirements, who cares that it met specifications?

Ron Kenyon
Seattle

Computer people don't deserve architect title

WHERE DO YOU get off calling computer people "architects?" ["Architects! Let's talk," CW, July 28]. The term architect is reserved by law to describe those individuals registered by state as licensed architects. They have earned that right through many years of arduous work and certification. What's next? Are you going to start calling computer people "IT attorneys" or "IT doctors?"

Are IT doctors and IT lawyers coming next?

Michael Carradine
Architect
Walnut Creek, Calif.

Editor's reply: *The term "information architect" or "IT architect" is in wide use in our profession. One indicator we checked was the Alta Vista search engine on the World Wide Web. That turned up 17,774 hits on "computer architecture," 2,836 hits on "information architecture," 321 hits on "information architect" and 221 hits on "computer architect." The terms IS or IT architect turned up about 150 hits.*

More letters, page 40

Computerworld welcomes comments from its readers. Letters shouldn't exceed 200 words and should be addressed to Maryfran Johnson, Executive Editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax number: (508) 875-8931; Internet: letters@cw.com. Please include an address and phone number for verification.

Novell: Get a clue!

David Strom

Chris Stone has been Novell's senior vice president of corporate strategy for just a few short weeks, so maybe it's not surprising that the year-end goals for Novell he laid out in the Sept. 8 issue of *Computerworld* need some work.

Indeed, I think he is doomed from the start. Let's take a look at what he said.

1. Stone wants to "turn Novell into an intranet/Internet provider."

I'm not sure what he means by this, but let's be charitable and assume he'd like his customers to run World Wide Web, electronic-mail, database and directory servers on NetWare. Unfortunately, Novell is on solid ground on only one out of the four — directories. The Web server business is all but over for Novell. Rather than build Web servers, it's helping a band of former Novellians at Novonyx change Netscape's server code to NetWare Loadable Modules. The database business is history. Back in Novell's early days, it still had a strong story with OracleWare and Btrieve. But if I want to run a Web site that serves up dynamic content, I need a Unix or Windows NT-based database server. (Try to find a version of the popular Web application development tool Cold Fusion for NetWare — you can't!)

Novell's position is right between a rock and a hard place.

And Novell's position in E-mail is right between a rock (GroupWise) and a hard place (the hundreds of Simple Mail Transfer Protocol and Point of Presence mail products that run on everything but NetWare). That's forcing NetWare customers to look elsewhere for solutions.

None of this will be fixed anytime soon. If we interpret Stone's remarks to mean Novell should build a market among Internet service providers, things look even more bleak. Does Novell even know where to start with service providers? How many 'net providers are running their business on NetWare? Somewhere close to none.

Novell has lost the interest of the third-party development community, and that can only have a spillover effect on Internet service providers. Once upon a time (say, four years ago), a vendor would be crazy not to support NetWare. Now, vendors almost never mention the N-word. That has to change for Novell to succeed with 'net service providers, who are paying attention to what their customers run.

2. Stone says he wants to "continue to roll out products on a very timely basis."

Just two words here: Windows NT. It is shameful that Novell has taken so long to embrace and support NT even to the point of pulling it into NetWare's directory services, let alone shipping a fully featured network client.

And let's look at what Novell has promised for the remainder of the year: It has to get out GroupWise 5.2, BorderManager, Distributed Print Services and clustering support. Beta versions don't count, either. That's a lot of software to ship just to play catch-up with the competition.

3. Stone wants to develop "a consistent, single strategy that everybody sings, everybody can explain and commit to."

Novell's strategy here has been spotty at best.

And now we hear: "It's not magic. It's reality." That's hardly a slogan you can hang your hat on, and not much of an improvement from earlier editions. Anyone remember the "Know No Bounds" launch of NetWare 4.0 in 1993? Here are a few alternative suggestions: "We do directories right." Or "A file server you can trust." And there is always, "Don't count us out yet!"

I think Stone picked the wrong set of goals. How about some realistic ones, like reenergizing the development community, demonstrating real value with directory services and helping people upgrade to NetWare 4.x? Even with these goals, Novell still will have to fight just to hold its ground.□

Strom (david@strom.com) writes about networking and the Internet, and is publisher of Web Compare *(www.strom.com).*

How politically correct is IS?

Michael Schrage

No question, the path from useful generalization to offensive stereotype can be a slick and slippery slope. Yet generalizations — and, yes, even stereotypes — contain their kernels of truth.

While critiquing Cobol legacies a few columns ago, I cracked that we might force 50-year-old programmers to learn a new language, "but hey, that's what human capital renewal is about." Many programmers age 50 and over were offended. They let me know. They also let me know how multilingual and multiskilled they were. Good for them.

But the demographics don't lie. Most programmers over age 50 are Cobol programmers, just as the majority of so-called webmasters who make more than $100,000 a year are under 35. Does that surprise anybody? Just how many 32-year-old year 2000 consultants are there relative to 52-year-old ones? Unfair stereotype or accurate generalization? Anybody out there think you can manage Generation X-ers pretty much the same way you manage Baby Boomers? Good luck if you do.

Here's another slice of demographic reality: For more than a decade now, nearly half of America's doctorates in computer science have gone to people for whom English isn't the native tongue.

Indeed, a common complaint in this tight management IS market is the (relatively) poor quality of English spoken by so many job candidates. Top MIS managers openly and honestly talk about the challenges of managing a workforce where fluency in English simply can't be taken for granted.

But language isn't the only issue. Culture matters. Just as Silicon Valley software jocks are culturally different from their Route 128 counterparts, people raised in India, China, Japan and Malaysia often have different ideas about what constitutes autonomy and teamwork than individuals who've been raised in the American heartland. Are these cultural distinctions a systems showstopper? Of course not. But only the most stupid, most cynical or most romantic of managers think those differences don't matter when they're trying to deliver new systems on time and on budget.

What would happen if we got research from Carnegie-Mellon or EDS indicating that, on average, ethnically homogenous development teams are more "productive" than more diverse teams? Is it possible we might find that, on average, user interface initiatives run by women are more highly regarded than those run by men? Do you think it's an accident or a conspiracy that women are so well represented at the Association of Computer Management's user interface body or at conferences on computer-supported cooperative work (i.e. groupware)?

Nearly half of America's doctorates in computer science go to people for whom English isn't a second language.

My point isn't to offend or to make PC stand for "politically correct" rather than "personal computers" here in *Computerworld*; it's to encourage this industry to become more explicit about the real management issues it faces.

The toughest challenge isn't managing complex digital technologies — it's managing complex human beings. There's a shortage of qualified people out there. Issues of ethnicity, age, gender, culture and language are destined to matter more during the next decade as more jobs go begging in a more diverse labor market.

Yes, we must always respect the individual's abilities and efforts. But we should also acknowledge the realities of changing demographics. If you think that's a foolish generalization, I plead guilty — but I'm not apologizing.□

Schrage (schrage@media.mit.edu.) is a research associate at the MIT Media Lab and author of No More Teams!

agitating

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MCI

LETTERS

Legacy apps (and coders) not quite ready for junkyard

MICHAEL SCHRAGE paints legacy systems as junkers and goes so far as to propose that Cobol be taxed ["That legacy looks more like a junker," CW, Aug. 25]. It's nice that he is able to sit in his MIT Media Lab and play with all the latest and greatest toys (which are bloated with bad code and bugs just waiting for the next update). He complains about the $5 trillion worth of investment. Yet we are constantly reminded of the total cost of ownership of thousands of dollars per PC times the number of PCs. How many trillions of dollars is that?

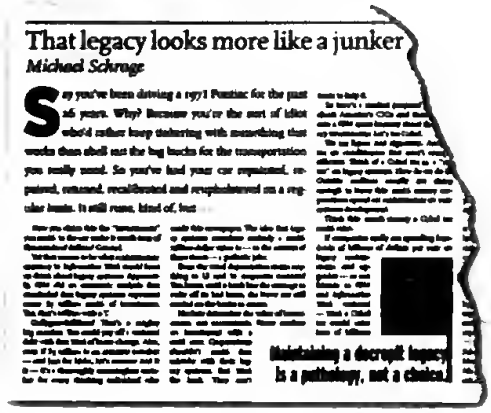
I have been in IS more than 32 years and have held positions of operator, programmer, analyst, project leader, network administrator, manager and educator. When dealing with those classic legacy systems — you know, the ones that produce the payroll, accounts receivable, accounts payable, general ledger, financial statement, purchasing and so on — what else can you trust except the tried-and-true systems you know work?

Louis F. Mullady
Burbank, Calif.
lmullady@earthlink.net

WHEN MICHAEL SCHRAGE speaks disparagingly of 50-year-old programmers in his editorial diatribe against "legacy" programs, he seems to be revealing his true motivation and his inexperience. Some of us who have been around for more that one iteration of the latest-and-greatest know that newer isn't always better. Just what is it that makes a legacy program so "decrepit?" Does the logic deteriorate with age?

Unless the function that a program provides is truly no longer needed, its disposal will require that the company invest (excuse me, sink) additional money in its successor. So, apart from promoting age bias and compiler chauvinism, what is the advantage of a precipitous leap to new non-Cobol code? Schrage would have IS managers recommend to their business executives that they toss out tried-and-true applications and replace them, at significant cost, with new and unproven programming for the sake of purging the industry of unsightly Cobol code. And we wonder why IS has a bad rep.

John R. Brown
Granger, Ind.



That legacy looks more like a junker

Michael Schrage

So you've been driving a 1971 Pontiac for the past 26 years. Why? Because you're the sort of idiot who'd rather keep tinkering with something that works than shell out the big bucks for the transportation you really need. So you've had your car engineered, re-painted, retuned, recalibrated and reupholstered on a regular basis. It still runs, kind of, but ...

Mainstreaming a decrepit legacy is a pathology, not a choice.

PERHAPS MANY OF my fellow "over-50 Cobol programmers" have already pointed out that idiots should not represent MIT in any way shape or form. But in case they thought it not worth the effort to dignify Michael Schrage's comments, I shall take the time. Being an over-50 Cobol programmer in no way inhibits one's ability to absorb other computer languages. As for his "Lets tax Cobol" idea, I would rather tax stupidity in journalism — then we could really pull in some money.

Cobol is the glue that makes business work. The decision to use only six positions to store dates was purely an economic decision on the part of management. Was it a good decision? Hell, no. But keep in mind that Cobol was not designed to write operating systems or compilers; it was designed as a Common Business Oriented Language. By the way, I am working on Java now.

Howard Weatherly
Battle Creek, Mich.
howard_weatherly@ibm.net

I REALLY AM surprised at our friend Michael Schrage. Ordinarily the brightest minter of opinion on these pages, he must have succumbed to sunstroke to offer us such a genuine rant instead of a delightful thought. A Cobol tax to punish computational pollution? Somebody send this man an umbrella, a broad-brimmed hat and a nice cool drink!

Michael, you are busted for conduct unbecoming a true intellectual.

Tom Iglehart
Brookline, Mass.
iglehart@humanmedia.com

MICHAEL SCHRAGE'S legacy "junker" column was provoking, but the analogy was the wrong one. I agree that a 26-year-old mainframe would be a junker, but a line of code written 10 (or 26) years ago is still as effective as a line of code written today.

The real analogy should be the application code as the car's driver: the business rules that direct the car.

Here you value experience — insurance companies are very happy to insure drivers with 26 years' experience, but not so keen on young C++ programs with less than one year of real-world experience.

By all means, let's junk the old mainframes.

But let's value those powerful legacy applications, and let's buy a sizzling new Unix or NT server to run them.

David Matthews
Unikix Technologies
Phoenix

MICHAEL SCHRAGE'S tirade about legacy systems is one of the most hostile and offensive articles I've ever read in *Computerworld*.

He needs a ticket to Earth, and the reality that many companies just can't afford to invest millions of dollars in new hardware and software when the old stuff is working fine and is much less expensive to maintain.

And by the way, "50-year-old programmers" do learn new languages and skills all the time. Keep your ignorant and revolting age discrimination to yourself.

Sue Chapman
Raleigh, N.C.

MICHAEL SCHRAGE'S article brings forth an interesting theory, if only the assumptions it was based on had any basis in reality.

He contends that money spent on legacy system maintenance is wasted. But if the company is getting value from the system, spending money keeping it going is not a waste, it's a cost of doing business. There are many reasons to replace a system, but age is not one of the valid ones.

I've programmed in more than a dozen languages on many different operating systems, and learning something new isn't the problem.

There are new whiz-bang client/server systems being written every day in Cobol. They are as easy to maintain as anything written in C++ or C. New systems are not necessarily easier to maintain than old systems. Ask anyone how the maintenance is going on their 5-year-old client/server systems.

There's a basic premise learned long ago by an earlier generation of engineers: Use the right tools for the job. We didn't shoot all the horses after we invented the automobile.

Keith Stone
Laboratory Corporation of America
Burlington, N.C.

MICHAEL SCHRAGE'S philosophy of "throw out the old and bring in the new" is nothing new.

He and others would suggest that the answer to the legacy and cost problems is to replace Cobol with some silver bullet language and system. However, high costs and slow delivery time of legacy systems are symptoms that many organizations exhibit.

The real problem is not the language or systems, it's how they were built and yes (ugh), documented.

These systems have become so overcrowded with unplanned and obsolete functionality that little, if any, of the staff understand how they work.

What is needed is a strategic transitional architecture initiative to restructure and incorporate the new. Such an architecture would give a company a choice, without the risks to the bottom line. This will require that not only the 50-year-old programmers change, but the entire organization.

But I like Schrage's idea of a Cobol tax to fund the organization. Who are the taxpayers, again?

Bob Elston
Senior systems architect
Chicago
relston@worldnet.att.net

I'm paid to solve problems, not reply to surveys

THANKS FOR ANNOUNCING the dirty little secret of these (not so) short-and-sweet callers ["Survey this!" column by Brett Arquette, August 18].

Each survey would cost my firm $10.

I'd gotten so disgusted with this waste of my time that we've established a policy of "no surveys" (which I'll admit I would break if it's *Computerworld* calling, since I pay to get the results in my subscription).

These callers are incensed that I won't spend a bit of my time with them, but they forget that I'm paid to solve problems for my employer and our customers.

Each occurrence that I take time out to complete a survey would cost my employer at least $10, not to mention putting me behind on the limited hours that I have at work.

Prior to cutting them off, I probably averaged six to eight calls a week.

David Long
IT manager
La Crosse, Wis.
drlong@acm.org

Hey, Bill: Here's what you can do with your $9 billion

I HAVE SOME SUGGESTIONS for Microsoft's $9 billion cash problem, which Editor Paul Gillin mentioned in his Aug. 11 Up Front column:

- Hire enough SQL Server support people to bring their response time down to hours or even minutes for a correct answer, rather than the current several days for the first returned telephone call.
- Put Microsoft Office on a diet before attacking other vendors' "bloatware." Word 97 is sluggish on my 200-MHz Pentium Pro. Is the PC's lifetime now so short that a 200-MHz Pentium Pro is obsolete junk?
- Even Microsoft's own software clobbers Microsoft's [Dynamic Link Libraries], too often with catastrophic results. Solve that problem.

I have more suggestions, but the above would be a good start.

Anthony E. Scandora Jr.
Wheaton, Ill.

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Transactions in the Age of the Consumer

Navigator

When building a data warehouse or data mart, you enter a world of new opportunities and obstacles. Even though at first glance data warehousing resembles other IT projects, there are many differences — some subtle, others blatant. Atre created this Data Warehouse/ Data Mart Navigator™ to help you not only understand this unique data warehousing development process from inception to completion but to master it as well.

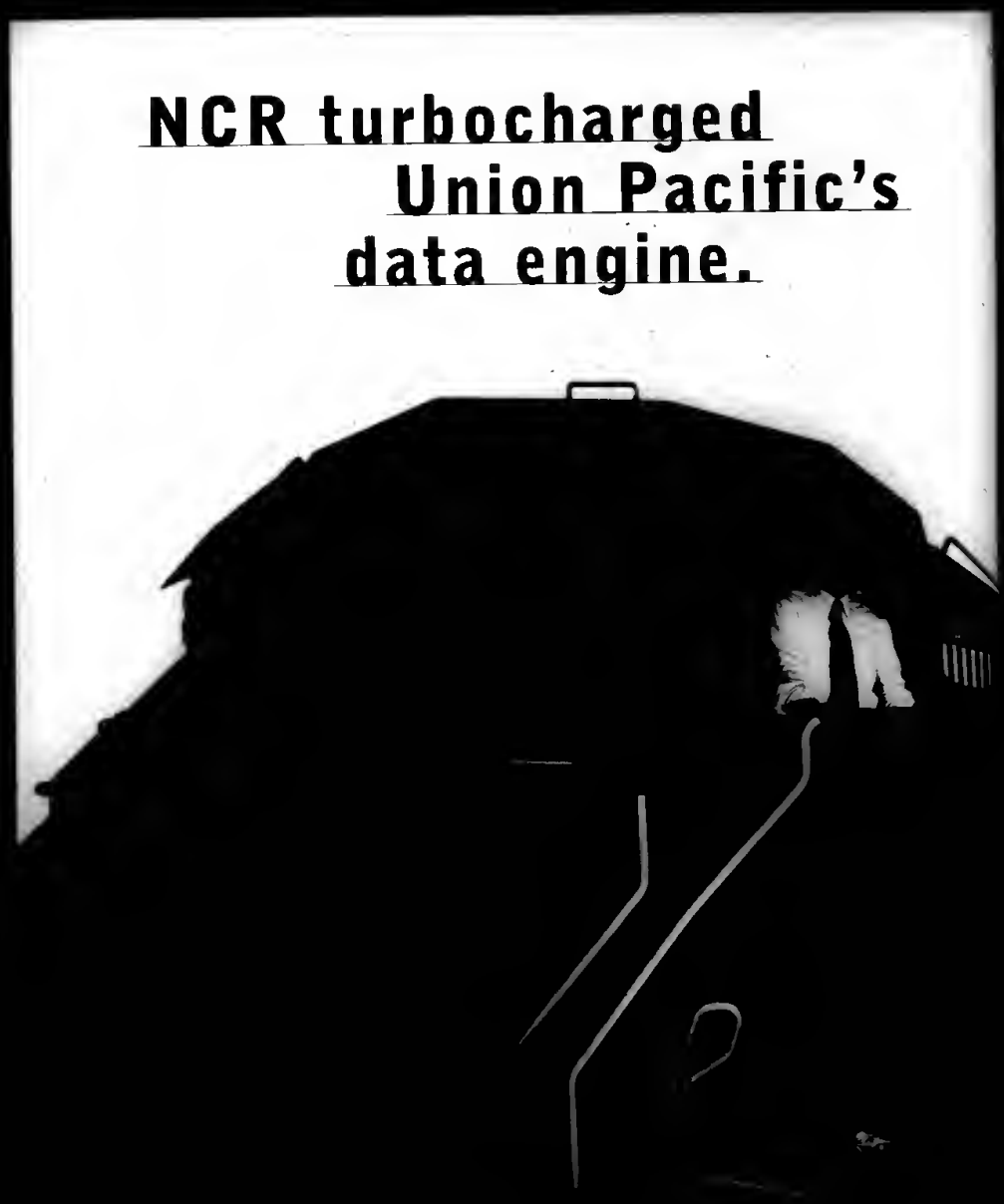
A decision support system is judged subjectively; whether it succeeds depends on how well it pleases and serves the users. But with operational systems, performance is measured in terms of meeting specific requirements. With an OLTP system, we may wave a magic wand over the project plans and recite the buzzword "business-driven development," but will still spend most of our energy finding a technology solution. With data warehousing, we cannot just invoke the buzzword. We must actually adopt a business-driven mindset.

This means that the primary purpose of a data warehouse or data mart is to meet the business needs of the users, however varied. Furthermore, the opportunities a data warehouse is to exploit should have the potential to significantly impact the bottom line. Given the high cost of data warehousing, the promise of a "general improvement in decision-making" isn't enough. Don't pursue any data warehousing application that doesn't promise to make a great deal of money.

Calculating the return on investment from your data warehouse is a real challenge. Since much of the work users will do with the warehouse/mart is exploratory, it may be impossible to quantify in advance the ROI on a warehousing project. And since you won't necessarily know what the users will find or how much it will be worth, you'll need a way around the accountants who want to pin you down to an ironclad cost/benefit analysis of your warehouse.

To do so, you may have to define benefits in qualitative, as well as in quantitative, terms. Define the business opportunities and potential. For instance, a warehouse might allow a bank to create a unified customer profile for the first time. Even if you don't know the dollar value of this profile, you can paint a picture of the programs and initiatives it makes possible. At the same time, some benefits have to be expressed in numbers.

NCR turbocharged Union Pacific's data engine.



intel inside

L. Merill Bryan, Jr.,
Senior Vice President,
Information Technologies,
Union Pacific

"We were searching for a data warehouse powerful enough to handle complex business questions and scalable enough to take us into the next century. The NCR Teradata® database made NCR the obvious choice."

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Transactions in the Age of the Consumer

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Navigator

The business-driven nature of data warehousing can be seen in many areas. In an OLTP system, the database and storage scheme are designed to provide fast data entry and retrieval. But a warehouse's database design is optimized to provide efficient data access in support of user queries. Furthermore, warehousing design should allow the flexibility needed to handle vague requirements. The query needs of users won't become clear until they start to use the system.

Nothing Succeeds Like Access

One of the best measures of a data warehouse or data mart is the degree to which the business units use it. A successful warehouse is one that grows, and it will grow in leaps and bounds in data volume, in applications, in queries, in reports. Your performance will be judged by how well you can handle the growth. But since huge success can overwhelm a warehouse, possibly causing it to fail, it is essential that every warehouse component be able to accommodate exponential growth. Your hardware and DBMS partners must be able to provide for almost limitless scalability.

A data warehouse is an ongoing project that is never really completed. Remember: Building the warehouse is an iterative process. Growth forces you to keep going through the process. Within the overall process are a dozen smaller processes. Atre's Data Warehouse/Data Mart Navigator™ depicts this overall process in the form of a never-ending circle.

Part of the old IT mindset, focused on technology solutions, was the tendency to emphasize product selection over process. But the process of building a warehouse does not entail selecting hardware and software until after much preparatory work.

Countless vendors claim to offer data warehouse/data mart products. We have hand-picked some for each step. This list, although not exhaustive, provides enough samples to give you a broad view of a complex marketplace.

What should you do with the list of products for each step? Check the box next to each product you have already installed. If you have multiple products from one category, you should question someone. You should also raise questions if you have no product for a category.

We hope that this Navigator will help guide you along a road that at times gets rough.

-Shaku Atre, President
Atre Associates

COMPUTERWORLD

THE Data W

❶ Determine Users' Needs

Relational Data:
- ❑ *Cincom Systems* SUPRA (Tbytes)
- ❑ *Computer Associates Int'l* Openingres (Tbytes)
- ❑ *IBM* DB2 Products (Tbytes)
- ❑ *Informix* Informix (DSA) (Tbytes)
- ❑ *NCR* Teradata RDBMS (Tbytes)
- ❑ *Oracle Corp.* Oracle (Tbytes)
- ❑ *Sybase* System11 & IQ (Tbytes)
- ❑ *Tandem* NonStop SQL (Tbytes)
- ❑ *Other* _____

Legacy Data:
- ❑ *Cincom Systems* TOTAL
- ❑ *Computer Associates Int'l* CA-IDMS, CA-Datacom
- ❑ *Computer Corp. of America* MODEL-204
- ❑ *Digital Equipment Corp.* RMS (Gbytes)
- ❑ *IBM* IMS, VSAM, SAM
- ❑ *Information Builders* FOCUS
- ❑ *Oracle/Digital Equipment Corp.* Rdb (Gbytes)
- ❑ *Software AG* ADABAS
- ❑ *Other* _____

Groupware:
- ❑ *IBM/Lotus* Notes
- ❑ *Microsoft* Exchange
- ❑ *Novell* Groupwise
- ❑ *Other* _____

Other Sources:
- ❑ Dow Jones
- ❑ Image Data
- ❑ Internet
- ❑ *NCR* Business Discovery, Information Discovery
- ❑ Newsfeeds
- ❑ *Other* _____

❷ Determine DBMS Server Platform

Relational DBMS:
- ❑ *Computer Associates Int'l* Openingres (Tbytes)
- ❑ *IBM* DB2 Products (Tbytes)
- ❑ *Informix* Informix (DSA) (Tbytes)
- ❑ *Microsoft Corp.* SQL Server (Gbytes)
- ❑ *NCR* Teradata Scalable Data Warehouse (Tbytes)
- ❑ *Oracle Corp.* Oracle (Tbytes)
- ❑ *Red Brick* Warehouse (Tbytes)
- ❑ *Sybase* System11 & IQ (Tbytes)
- ❑ *Tandem* NonStop SQL (Tbytes)
- ❑ *Other* _____

Relational Parallel Server:
- ❑ *IBM* DB2 Parallel Edition
- ❑ *Informix* Informix DnLine Extended Parallel Server (XPS)
- ❑ *NCR* Teradata RDBMS
- ❑ *Oracle Corp.* Parallel Server Option (PSO)
- ❑ *Red Brick* Warehouse VPT and xPP
- ❑ *Sybase* MPP Server
- ❑ *Tandem* NonStop SQL/MP
- ❑ *Other* _____

Multidimensional Databases (MDD):
- ❑ *Arbor Software* Essbase
- ❑ *Gentia Software* GentieDB
- ❑ *Holistic Systems* Holos
- ❑ *Hyperion* Enterprise
- ❑ *Kenan Technologies* Acumate ES
- ❑ *Pilot (The Cognizent Corp.)* Pilot Analysis Server
- ❑ *SAS Institute* System Base
- ❑ *Other* _____

step 10

/arehouse/Data Mart N
step 12
step 1
step 11

Mart Navigato

step 1

step 2

step 3

Determine Hardware Platform

Where should the data warehouse or data mart be housed?

- Which hardware platforms do we already have?
- Determine cost, interoperability and staff training considerations.
- Determine hardware investment based on Return on

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Atre Associates, Inc.

6 Data Acquisition & Cleansing

- ❑ *Carleton* Passport
- ❑ *Evolutionary Technologies Int'l (ETI)* Extract Tool Suite
- ❑ *Informatica* PowerMart
- ❑ *Information Builders* EDA/Copy Manager
- ❑ *NCR* Teradata RDBMS Fast Load/Multi-load
- ❑ *Platinum Technology* InfoRefiner
- ❑ *Prism Solutions* Warehouse Manager, Change Manager
- ❑ *QDB Solutions (Prism Solutions)* Prism Quality Manager
- ❑ *SAS Institute* SAS System
- ❑ *Software AG* Natural, Natural Construct
- ❑ *Other* _____

Address Cleansing:

- ❑ *Apertus Technologies* Enterprise/Integrator, Enterprise/Access
- ❑ *Group 1 Software* NADIS, LSF
- ❑ *Harte-Hanks Data Technologies* Trillium Software System
- ❑ *Postalsoft* Library Products
- ❑ *Vality Technology* Integrity Data Reengineering Tool
- ❑ *Other* _____

7 Data Transformation, Transportation & Population

- ❑ *Carleton* Passport
- ❑ *Computer Associates Int'l* CA-OpenIngres Replicator, XCOM
- ❑ *DB Star* Migration Tool Suite
- ❑ *Hyperion* Analyst
- ❑ *IBM* DataPropagator (Relational & Non-Relational)
- ❑ *IBM/Lotus* Notes Pump
- ❑ *Informatica* PowerMart
- ❑ *Intersolv* DataDirect, SmartData
- ❑ *NCR* Teradata RDBMS Fast Load/Multi-load
- ❑ *Oracle Corp.* Symmetric Replication
- ❑ *Platinum Technology* InfoPump, InfoTransport
- ❑ *Praxis* OmniReplicator
- ❑ *Prism Solutions*
- ❑ *Sagent Technology, Inc.* Data Mart Server
- ❑ *SAS Institute* SAS System
- ❑ *Smart Corp.* The SMART DB Workbench
- ❑ *Sterling Software* CONNECT:Direct
- ❑ *Sybase* Replication Server
- ❑ *VMark Software* HyperStar
- ❑ *Other* _____

8 Determine Middleware Connectivity

- ❑ *Computer Associates Int'l* CA-LDM, XCOM
- ❑ *Cross Access Corp.* Data Delivery System
- ❑ *Information Builders* EDA/SQL
- ❑ *NCR* TDP END
- ❑ *NCR* Teradata Database Query Mgr.
- ❑ *Oracle Corp.* SQLNet
- ❑ *Sybase* Enterprise Connector
- ❑ *Software AG* SourcePoint
- ❑ *Other* _____

9 Prototyping, Querying & Reporting

Ad hoc Queries & Reports:

- ❑ *Borland* ReportSmith

Advanced Queries & Reports:

- ❑ *Andyne Computing* GQL

- ❑ *Oracle Corp.* Oracle (Tbytes)
- ❑ *Red Brick* Warehouse (Tbytes)
- ❑ *Sybase* System11 & IQ (Tbytes)
- ❑ *Tandem* NonStop SQL (Tbytes)
- ❑ *Other* _____

- ❑ *Tandem* NonStop SQL/MP
- ❑ *Other* _____

Multidimensional Databases (MDD):
- ❑ *Arbor Software* Essbase
- ❑ *Gentia Software* GentiaDB
- ❑ *Holistic Systems* Holos
- ❑ *Hyperion* Enterprise
- ❑ *Kenan Technologies* Acumate ES
- ❑ *Pilot (The Cognizant Corp.)* Pilot Analysis Server
- ❑ *SAS Institute* System Basic
- ❑ *Other* _____

Determine Hardware Platform

MVS-Based or Midrange:
- ❑ DEC VAX
- ❑ IBM, AS/400
- ❑ *Other* _____

Unix-Based:
- ❑ Data General
- ❑ Hewlett-Packard
- ❑ IBM
- ❑ *NCR* WorldMark Series
- ❑ Sequent Computer Systems
- ❑ Siemens Pyramid
- ❑ Silicon Graphics
- ❑ Sun Microsystems
- ❑ Unisys
- ❑ *Other* _____

Windows/Windows NT- & Intel-Based:
- ❑ DEC Alpha
- ❑ IBM and Compatibles
- ❑ *NCR* WorldMark Series
- ❑ *Other* _____

Disk Storage:
- ❑ EMC Corp. (Disk Array with RAID)
- ❑ IBM (Adstar Distributed Storage Manager)
- ❑ Storage Computer Corp.
- ❑ Storage Technology (Iceberg)
- ❑ *Other* _____

Data Modeling:
- ❑ *Cayenne Software* Groundworks Terrain
- ❑ *Hyperion* Analyst
- ❑ *LBMS* Systems Engineer, Process Engineer
- ❑ *Logic Works* ERwin, BPwin

- ❑ *NCR* Application Transaction Modeling
- ❑ *Oracle Corp.* Designer/2000
- ❑ *Popkin Software* System Architect
- ❑ *Powersoft/Sybase* S-Designor
- ❑ *SILVERRUN Technologies, Inc.* SILVERRUN
- ❑ *Other* _____

Construct Metadata Repository

- ❑ *Carleton* Passport, MetaCenter
- ❑ *Evolutionary Technologies Int'l (ETI)* Metadata Exchange Library
- ❑ *Hewlett-Packard* Intelligent Warehouse
- ❑ *IBM* DataGuide/2
- ❑ *Intelidex* Metadata Manager

- ❑ *Platinum Technology* PR/MVS Open Edition Environment, DataShopper
- ❑ *Prism Solutions* Dictionary Manager
- ❑ *R&O* Rochade Repository
- ❑ *Other* _____

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step 9

Data Warehouse/Data Mart Sequencing Chart

1 Determine Users' Needs

step 8
step 7
2 DBMS Platform
3 Hardware Platform
Data Modeling
5 Metadata Repository
6 Data Acquisition & Cleansing
7 Transformation, Transportation, Population
8 Middleware Connectivity

Information & Data Modeling

Building an Information Model

- How do I use a data model to express relationships between the data?
- Resolve access and usage issues.
- Determine the logical and physical design of the data warehouse or data mart

the Metadata Repository

step 5

step 6

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6 Data Acquisition & Cleansing

7 Transformation, Transportation, Population

8 Middleware Connectivity

9 Prototyping, Querying & Reporting

10 Data Mining

11 Online Analytical Processing (OLAP)

10 Data Mining

12 De Sy

8 Determine Middleware Connectivity

- ❑ *Computer Associates Int'l* CA-LDM, XCOM
- ❑ *Cross Access Corp.* Data Delivery System
- ❑ *Information Builders* EDA/SQL
- ❑ *NCR* TOP END
- ❑ *NCR* Teradata Database Query Mgr.
- ❑ *Oracle Corp.* SQLNet
- ❑ *Sybase* Enterprise Connector
- ❑ *Software AG* SourcePoint
- ❑ *Other* _____

9 Prototyping, Querying & Reporting

Ad hoc Queries & Reports:

- ❑ *Borland* ReportSmith
- ❑ *Cognos* Power Play
- ❑ *Crystal Reports (Seagate)* Crystal Info, Crystal Reports
- ❑ *Hewlett-Packard* Information Access
- ❑ *Intersolv* DataDirect Explorer
- ❑ *NCR* Management Discovery Tool
- ❑ *Oracle Corp.* Discoverer/2000
- ❑ *Platinum Technology* InfoReports
- ❑ *Sybase* InfoMaker
- ❑ *Other* _____

Advanced Queries & Reports:

- ❑ *Andyne Computing* GQL
- ❑ *Brio Technology* BrioQuery
- ❑ *Business Objects* BusinessObjects
- ❑ *Cognos* Impromptu
- ❑ *Computer Associates Int'l* CA-Visual Express
- ❑ *Information Builders* FOCUS
- ❑ *IQ Software* Intelligent Query
- ❑ *Platinum Technology* Forest & Trees
- ❑ *SAS Institute* SAS System
- ❑ *Software AG* Esperant
- ❑ *Sterling Software* Vision:Clearaccess Vision:Clearmanage
- ❑ *Other* _____

10 Data Mining

- ❑ *Angoss* KnowledgeSEEKER
- ❑ *ASA* DB Profile
- ❑ *Data Mind Corp.* Data Mind Professional
- ❑ *Epsilon Data Management* EQL
- ❑ *Group 1 Software* Model Max, Smart Marketing Suite
- ❑ *HyperParallel* //Discovery
- ❑ *IBM* Intelligent Miner
- ❑ *Information Discovery* IDIS:3
- ❑ *Integral Solutions Ltd.* Clementine
- ❑ *NCR* Knowledge Discovery Workbench (KDW)
- ❑ *Pavilion Technologies* Process Insights
- ❑ *Pilot (The Cognizant Corp.)* Pilot Decision Support Suite
- ❑ *SAS Institute* Data Mining
- ❑ *Silicon Graphics* MineSet
- ❑ *Other* _____

11 Online Analytical Processing (OLAP)

OLAP:

- ❑ *Axciom* Market GEO
- ❑ *Advanced Visual Systems* AVS Express
- ❑ *Andyne Computing* PaBLO
- ❑ *Business Objects* BusinessObjects
- ❑ *Cognos* Impromptu, PowerPlay
- ❑ *Comshare* Commander
- ❑ *Dimensional Insight* CrossTarget, DataFountain
- ❑ *Gentia Software* GentiaDB
- ❑ *Holistic Systems* Holos
- ❑ *Hyperion* Analyst, Enterprise
- ❑ *IBM* Intelligent Decision Server, ShowCase Vista
- ❑ *IQ Software* IQ/Smart Server
- ❑ *Kenan Technologies* Acumate
- ❑ *MapInfo* MapInfo Desktop
- ❑ *MathSoft* Rainier
- ❑ *NCR* Management Discovery Tool
- ❑ *NetCube* Cube Tech
- ❑ *Oracle Corp.* Express Objects, Express Analyzer
- ❑ *Pilot (The Cognizant Corp.)* LightShip Professional
- ❑ *SAS Institute* Application System, EIS, Visualization Analytical Object Server
- ❑ *Other* _____

ROLAP (Relational OLAP):

- ❑ *Information Advantage* DecisionSuite
- ❑ *Informix* MetaCube
- ❑ *MicroStrategy* DSS Agent, DSS Executive, DSS Server, DSS Architect, DSS Web
- ❑ *Platinum Technology* InfoBeacon
- ❑ *Other* _____

12 Deployment & Systems Management

- ❑ *Computer Associates Int'l* CA-UniCenter
- ❑ *Hewlett-Packard* Intelligent Warehouse
- ❑ *NCR* TOP END, LifeKeeper & Teradata RDBMS Tools
- ❑ *Tivoli* Management Environment (IBM)
- ❑ *Other* _____

ployment &
stems Management

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NCR

Transactions in the Age of the Consumer

Greg Meekings, Managing Director, Corporate Technology Group, Reuters.

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!Candle

Corporate Strategies

Briefs

150 IS professionals were asked: "What percentage of your workforce telecommutes at least one day per week?"

Percentage of workforce	
71	None
24	1% to 4%
24	5% to 9%
15	10% to 19%
11	20% to 49%
3	50% to 74%
2	75% to 99%
2	100%

Sabre [illegible] Airways [illegible]

▶ *Loss of control presents [illegible]*

By Jaikumar Vijayan

US AIRWAYS GROUP, INC.'s outsourcing arrangement with The Sabre Group Holdings, Inc. — announced last month as a "multibillion-dollar, long-term relationship" — was designed to make the airline more responsive to customers while trimming IS costs. But the size and scope of the deal could make managing it a major challenge for Arlington, Va.-based US Airways, analysts warned.

"One of the biggest risks in arrangements like these is that you lose control over a very important part of your business," said Kurt Johnson, an analyst at Meta Group, Inc. in Boston.

"The more you outsource, the more difficult the whole thing becomes to control and manage," Johnson said, especially because US Airways is outsourcing not just information technology services and infrastructure but also core application development work.

Under terms of the deal — the two companies signed a [illegible] of intent Aug. 28 — Fort Worth, Texas-based Sabre will operate US Airways' IT infrastructure, including facilities, hardware, software, application development, personnel and training. Initially at least, information systems staff and operations research staff at US Airways' data center in Winston-Salem, N.C., will be offered positions at Sabre. Sabre's main data center is in Tulsa, Okla.

US Airways officials said they expect to see "significant savings" from the deal because Sabre will provide year 2000

Sabre, page 44

Toyota revs up project management

By Julia King

WHEN BARBARA COOPER came on board as chief information officer last year, managers at Toyota Motor Sales U.S.A., Inc. couldn't give her a breakdown of ongoing IS projects because nobody knew about them all.

Individually, information systems managers at the Torrance, Calif.-based car manufacturer kept data about projects in spreadsheets and PC-based scheduling programs. But a comprehensive overview of exactly who was working on what simply didn't exist.

YEAR 2000 UPGRADE

Meanwhile, $24 billion Toyota Motor Sales was gearing up for a massive year 2000 project that would require as many staffers as were available plus the services of dozens more outside contractors. All told,

Toyota, page 44

For Thrifty, Web is 'great equalizer'

By Matt Hamblen

THRIFTY RENT-A-CAR SYSTEM, Inc. started to rent cars through its World Wide Web site 10 months ago, after some not-so-subtle prompting from visitors.

"Hey, stupid! Get an online booking system!" was how one electronic-mail message read.

It was that kind of indelicate nudge that helped accelerate an ongoing effort at Thrifty, in Tulsa, Okla., to speed up visitors' access to the site (*www.thrifty.com*) and their ability to navigate around it. The goal is to make the Web site a viable channel for electronic commerce, company officials said.

Favorable results are starting to come in: In August, the first

Thrifty, page 46

Data mining lifts ski marketing

▶ *Resort conglomerate consolidates systems*

By Sharon Gaudin
BETHEL, MAINE

UNTIL AMERICAN SKIING CO. started building a data warehouse and data mining tools, its marketing efforts were headed downhill.

The ski resort conglomerate, based at the Sunday River resort here, was having a hard time keeping track of critical information — as basic as who its customers were. It had been run as one ski resort from its inception in the early 1950s, but a buying spree in the last few years added eight resorts in several states and meant a sudden, nearly overwhelming onslaught of information and disparate legacy systems.

For American Skiing's information systems department, that meant consolidating a wide range of systems and building a centralized data warehouse that will collect information coming in daily from ski resorts around the country. "Integrating our information into one database be-

Ski resort, page 44

Corporate Strategies

Case Studies • Trends • Outsourcing

Briefs

Visa gets smart (cards)

Visa International, Inc. plans to test smart cards that use public-key encryption. Merchants will be able to use the cards, which feature a crypto-controller chip, to access terminals that accept Visa cash cards. The cards will authenticate a merchant's financial information and configure the Visa cash reader terminals. The smart cards will be tested in the U.K. and Japan.

Nike to link sales data

Nike, Inc. in Beaverton, Ore., has purchased System ESS software from Tarrytown, N.Y.-based Industri-Matematik International Corp. Nike hopes to use the software to help make product order and availability information on its Japanese footwear and apparel divisions more accessible to company decision-makers. The first phase of the rollout, which will support Nike's Japanese customer service center, should be completed by next November.

HAL MAYFORTH

150 IS professionals were asked: "What percentage of your workforce telecommutes at least one day per week?"

Respondents	Percentage of workforce telecommuting
71	None
24	1% to 4%
24	5% to 9%
15	10% to 19%
11	20% to 49%
3	50% to 74%
2	75% to 99%
2	100%

Source: International Data Corp., Framingham, Mass.

Sabre lands US Airways outsourcing

► *Loss of control presents challenge*

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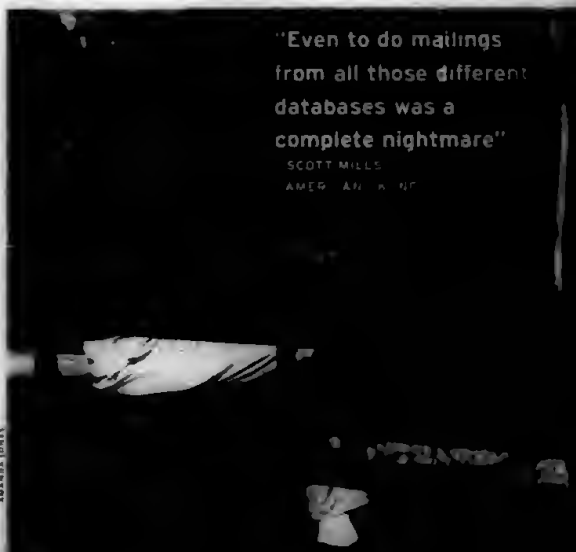
Ski resort, page 44



AMANDA JONES

Toyota's project management

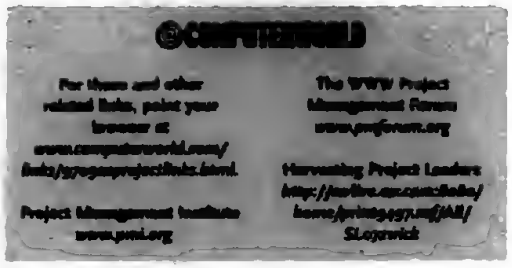
CONTINUED FROM PAGE 43

more than 35,000 in-house computer programs required date fixes — all before a self-imposed deadline of Jan. 1, 1998.

To do that, Cooper recently pushed Toyota to create its first-ever project management office through which all IS project plans will be coordinated and tracked — even after the year 2000 project is finished, company officials said.

"We've adopted project management as our saving grace," said Randy Bauer, Toyota's year 2000 project manager.

"We're taking the time now to learn a project management tool and to understand what good project management is, so we're not always starting over from scratch. For us to stay competitive, we have to do that now," Bauer said.



The new project office also significantly boosts Toyota's chances for completing its year 2000 project on time, according to research conducted by Gartner Group, Inc. in Stamford, Conn.

Gartner's study indicates that without making significant changes to project management processes, a 100-person application development group can expect to spend more than $10 million on software projects that will be canceled eventually. "And that's just for the stuff that gets killed off," said Gartner analyst Richard Hunter.

On the other hand, development groups that implement project management best practices — which include creating a central IS project office — can reduce their chances of project failure by 80%. At Toyota, Bauer said, virtually all aspects of the year 2000 project will be prioritized and tracked through the new project office, which is now in the process of implementing an enterprise project management system from ABT Corp. in New York. Toyota is investing $170,000 in the ABT software and training for 20 project managers and about 60 team members.

TOYOTA'S YEAR 2000 PROJECT SCOPE

- 17,339 mainframe programs, for a total of 10.8 million lines of code
- 17,743 AS/400 programs, for a total of 4.5 million lines of code
- PC networks serving 6,900 employees in the U.S.
- 1,185 Toyota dealers
- 174 Lexus dealers

Using the system, managers in charge of different year 2000 subteams will be able to track the team's overall progress on tasks ranging from rewriting software contracts to reprogramming security and air-conditioning systems at Toyota manufacturing plants.

That's because teams follow standardized project management procedures, such as documenting all software changes as they are made, and file uniform progress reports to a central data repository that is accessible to all members.

Once that is done for all IS projects, Toyota managers will know the number and type of all IS projects in progress. They will know who in IS is working on them, how much they cost and how many hours went into completing each project task.

"Before, projects got done, but it was on a case-by-case basis, and we never improved our process along the way," Bauer said. By sharing information across projects, Toyota managers said, they can reduce errors and redundant work and respond more quickly than before to changing business requirements. The practice calls for one project team, for example, to share how it developed an effective interface to a legacy system so a second team won't have to work out its method from scratch. □

Sabre

CONTINUED FROM PAGE 43

fixes for its legacy systems.

The deal is expected to be finalized by year's end. Transfer of technology services will be completed within the next two years.

Sabre brings to US Airways, the world's fifth-largest airline, the same application development skills and expertise it has used in similar arrangements with other passenger carriers.

Sabre — which was spun off last year as an independent entity from American Airlines parent AMR Corp. — provides IT services and support to Paris-based Groupe Air France SA, Continental Airlines, Inc. in Houston and Cathay Pacific Airways Ltd. in Hong Kong.

SOUP TO NUTS

For US Airways, Sabre will handle systems for reservations, airport check-in, aircraft- and crew-scheduling, yield management and electronic ticketing. Sabre will acquire all of US Airways' computer equipment and proprietary software.

Outsourcing typically helps customers trim costs in areas such as centralized procurement, administration and installation services that such deals usually entail. The economies of scale realized through centralized purchasing, for instance, usually result in lower hardware, software and licensing costs.

Sabre's growing list of clients is part of a larger trend of technology investments in the airline industry.

Chicago-based United Airlines, for example, recently installed a system to give its operations control center staff a single-workstation view of flight plans, weather and ground crew reports around the U.S. That technology is intended to save $50 million per year on fuel, personnel and delay-related costs [CW, Sept. 8].

The industry at large is seeking to inject new technologies into their operations while retaining investments in outdated equipment, said Barbara Beyer, president of Avmark, Inc., an aviation consulting firm in Arlington, Va. □

OUTSOURCING SABRE

What is being outsourced: Technology services including application development, training, hardware, software, facilities, infrastructure, personnel and year 2000 work.

Why: To cut IS-related costs and deliver better customer service.

Cost: Estimated at billions of dollars over the next few years.

Schedule: Deal finalized by year's end. Services completely transferred within two years.

Data mining gives marketing a lift

CONTINUED FROM PAGE 43

came more critical the more resorts we bought because each one had five or six databases of their own. The problem really snowballed," said Scott Mills, director of IS at American Skiing.

The company's centralized approach, Mills said, "will help us get more people skiing. We can give bonus points to people who have been skiing two to three times a year so we can get them to come back and ski four to five times a year."

Les Otten, CEO of American Skiing, said the warehouse fits right in to the company's business strategy.

"The data warehouse will allow us greater access to our customers on a much more personalized basis," he said. "It will help us make them feel special, and that's what it's all about in this world of sameness."

Mills said he is switching American Skiing's various servers over to IBM RS/6000 Unix servers and boxes running on Microsoft Corp.'s Windows NT. And he just finished building a data warehouse using databases and tools from San Jose, Calif.-based Unify Corp. The Unify-based data mining tool is only about a week away from completion. Mills estimated that the entire warehouse move and switchover will cost the company from $5 million to $6 million; about $3 million of that will be spent on the servers and networks.

CENTRALIZATION

Mills said each resort will have a Windows NT server that will handle all ticketing applications, including producing lift tickets and accepting the company's loyalty bonus card. Information from each transaction will be sent from the individual server to a centralized Unify database that sits on an RS/6000.

The system was designed so every transaction is immediately logged. If a skier buys a lift ticket at Sunday River, for example, it will be noted on his loyalty card the next day if he goes to buy a ticket at another resort owned by the company.

Mills said that with nine resorts under one umbrella, he has to keep track of 2 million skiers. "Even to do mailings from all those different databases was a complete nightmare," he said.

Ezra Gottheil, an analyst at Hurwitz Group, Inc. in Newton, Mass., said knitting information together after a merger or buyout is critical to running a smooth business.

The company "can't move strategically as a whole until people can look at data in one place," Gottheil said. "The more you can gain an overview of what's happening, the more you can see it as one company. Unless you do that, you're gaining nothing by having them together."

Other than Sunday River, American Skiing also owns Killington in Killington, Vt.; Mount Snow in Haystack, Vt.; Sugarbush in Sugarbush, Vt.; Sugarloaf in Sugarloaf, Maine; Attitash Bear Peak in Attitash Bear Peak, N.H.; and The Canyons in Utah. The company is finalizing deals for Steamboat in Steamboat Springs, Colo., and Heavenly Valley in Lake Tahoe, Nev. □

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For Thrifty, Web is 'great equalizer'

CONTINUED FROM PAGE 43

month of formal reporting, the site produced hundreds of worldwide car rentals worth hundreds of thousands of dollars in revenue. Officials declined to cite specific figures.

More important, Thrifty estimates the cost of taking a reservation from the site costs one-third less than using a telephone reservations employee, officials said. Referring to the "Hey, stupid!" E-mail flame, vice president of communications Meloyde Blancett-Scott said, "We learned that people speak clearly on the Web. And we learned that if you're going to be in this [electronic-commerce] business, you really have to do it [well] or you're considered passe. We decided we didn't have a choice: It was either jump in or forget about a lot of customers."

Blancett-Scott and Jim Henderson, Thrifty's Web systems administrator, have been part of a corporate team of managers to assess and implement ways to steadily improve the site, which receives more than 60,000 hits per day. It was first posted in March 1996, with a modest objective of merely being a Web presence, they said. Thrifty is considered the smallest of the large rental-car companies, ranking seventh in overall revenue with $517 million last year. Hertz Corp. in Park Ridge, N.J., is the largest.

ADDRESSING PROBLEMS

The current objective is to "get the site to the point where it's lightning speed and great quality," Blancett-Scott said. Thrifty believes the Internet is "a great equalizer" in the company's efforts to compete against market leader Hertz, he said. By the end of the year, Thrifty plans to start aggressively promoting the Web site and creating partnerships with travel companies and others, officials said. Speed on the site had been an obstacle to its success, Henderson said. But it improved greatly after Thrifty hired a new Internet service provider last spring, Southwestern Bell Internet Services in Dallas. The new service included a T1 connection to a point of presence in Tulsa, speeding up access and taking site users off the network used by Thrifty employees to access the Web. Navigation should be easier when server software is changed this fall, Henderson said.

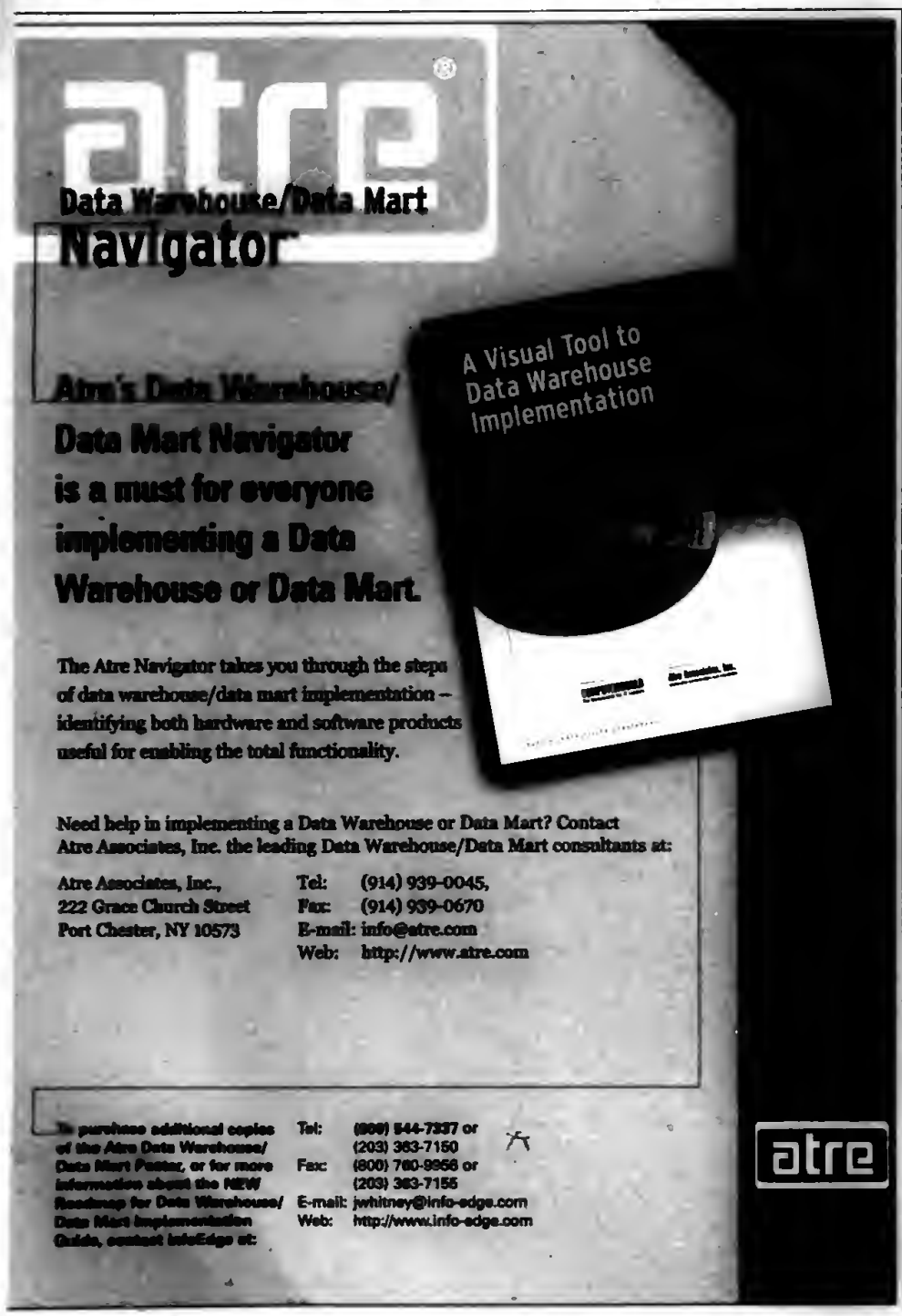
"Last spring, there were a number of concerns with the site, and the speed of connection was very low," Henderson said. The slowness frustrated customers, caused lock-ups and even led to lost reservations. A *Computerworld* review of rental-car Web sites at the time found speed on Thrifty's site "poor," although it got the highest overall grade of four rental-car Web sites with a B- [CW, Feb. 28].

Navigation time through the site is still a problem, but that should be cleared up soon, Henderson said.

Two recent visits to the site using a T1 line connection showed it took 10 to 20 seconds to move from the site's home page to the first rental page. Once, the connection to the site was lost entirely when it came time to designate "U.S. region" to enter information for a quote on the cost of a rental.

Except for the lost connection, the delays were no worse than on the Hertz Web site (*www.hertz.com*).The speed problems are one of the realities of developing an effective site, Thrifty officials said. "None of us was prepared to deal with all it would take," Blancett-Scott said. "It was a substantial surprise to learn all the time it takes to keep the site top-notch."

Tim Sloane, an analyst at Aberdeen Group, Inc. in Boston, said Thrifty is taking the right steps by revving up its business plan for the site while it improves technical performance. "The market is still open in the car-rental arena," he said. "Nobody has taken the high road yet."□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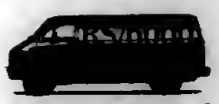

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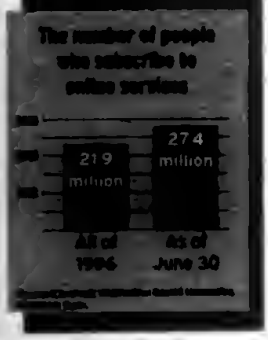

Ticket sites try for boffo sales

▶ Ticket sellers look for seats in cyberspace

By Mitch Wagner

COMPANIES THAT SELL tickets to showbiz events hope the Internet will be their ticket to stardom.

Companies such as Ticketmaster Group, Inc.; Shubert Organization, Inc., which sells tickets to Broadway shows; and MovieFone, Inc. say the Internet offers two opportunities: The companies can move into cyberspace with their traditional business models, selling tickets to movies, plays and concerts. And they can seek ways to use the Internet to build new business.

GOOD FIT

"The entertainment consumer, especially in urban areas, tends to be fairly information-savvy," said Matt Blumberg, MovieLink general manager at MovieFone in New York. "They hit the demographic of the Internet user pretty closely. It's a good match."

The Internet also fits a business model consumers are already used to, experts say.

Unlike clothing, for instance, consumers already buy their entertainment tickets by remote control, phoning in an order to an operator who is obviously using a computer. It's only a short step for consumers to use the computer themselves.

"Our philosophy is that the agent is an extension of the customer's fingers over the phone," said Dave Andrews, vice president of Shubert Ticketing Services. "On the Internet, we're merely taking what the consumer does over the phone and translating it to the keyboard."

But despite initial success, ticket sales on the Internet could be better.

Vernon Keenan, an analyst at Zona Research, Inc. in Redwood City, Calif., said ticket sites often scare off consumers by im-

Ticket sites, page 53

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– Alan Citron, Ticketmaster

Tax group sprints to an intranet

By Carol Sliwa

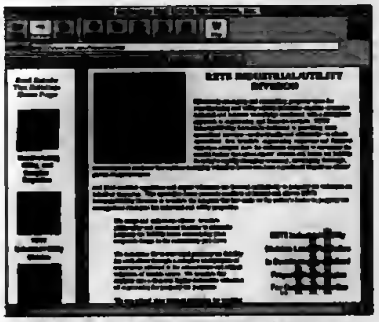
DALLAS-BASED Real Estate Tax Services, Inc. (RETS) didn't have an intranet this time last year. It didn't even have the technical staff or the network infrastructure necessary to get one up and running.

Yet without any cost/benefit analysis or other evidence, it launched an intranet project.

Company officials sensed in their gut that an intranet would help create a profitable knowledge base for its 240 employees spread across 18 offices in 13 states and one Canadian province, said Carl Hoemke, CEO at the RETS group that manages property tax functions for utility and industrial companies nationwide.

RETS outsourced the development of the intranet to US Web

Tax group, page 53



Real Estate Tax Services had a public 'net site and now is adding a corporate intranet

Firewall balances bandwidth

By Patrick Dryden

THE LEADING FIREWALL vendor this week will attempt to let IS managers control the performance as well as the security of an organization's Internet traffic.

Check Point Software Technologies Ltd. in Redwood City, Calif., will introduce FloodGate-1 bandwidth management software.

Running with Check Point's firewall or alone, it lets managers define enterprisewide policies that allocate available bandwidth to certain users or applications for inbound and outbound traffic.

The goal is to let information systems managers ensure that vital business traffic takes higher priority than other Internet activity.

"Everyone used to get the same amount of bandwidth, whether they were customers transferring files or our users downloading pictures of *Dilbert*," said beta tester Habeeb Qadri, security architect at Synopsis, Inc. in Mountain View, Calif. Synopsis customers need

Check Point, page 56

COMMENTARY

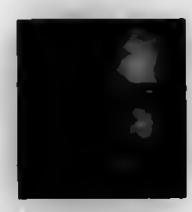
Conquering E-consumer fears

MITCH WAGNER

EXPERTS LIKE to talk about electronic commerce as something that will happen in the distant future, in the same way Eisenhower-era futurologists predicted that by the late 1990s, we'd all have personal helicopters and take our vacations on the moon.

But for me, Internet commerce isn't something off in the future — I'm enjoying the benefits right now.

About 18 months ago, I realized I'd been writing for a long time about Internet commerce but hadn't actually tried it. In the name of research, shouldn't I actually buy something online — anything — just to be able to say I'd done it and to see what it's like?



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Wagner, page 53

The Internet

Electronic Commerce • The World Wide Web • Intranets

Briefs

Bugs

Someone with physical access to your PC can swipe the passwords off your machine if you leave a Windows 95 system unattended, Microsoft Corp. has warned. The Revelation utility will let someone access saved passwords in Windows 95 that generally appear as a series of asterisks. Microsoft officials said users should log off when they leave their PCs for a long time and run password-protected screen savers when they step away for a short time. More information is available at *www.microsoft.com/windows95/info/password.htm*.

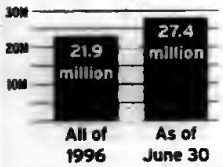
From spams to scams

Responding to a leap in complaints about Internet scams — from 389 for all of 1996 to nearly 100 per month lately — the National Fraud Information Center has established a beachhead on the World Wide Web. The site (*www.fraud.org/fav.htm*) provides warnings similar to those concerning deceptive telemarketing practices.

Netscape gives advice

Netscape Communications Corp. last week announced two support programs for developers: SupportEdge, to give corporations with in-house developers coding advice over the telephone; and an Application Builder membership level to its DevEdge program, to provide independent software vendors with test copies of Netscape products on all available platforms.

The number of people who subscribe to online services



Source: Electronic Information Report Newsletter, Stamford, Conn.

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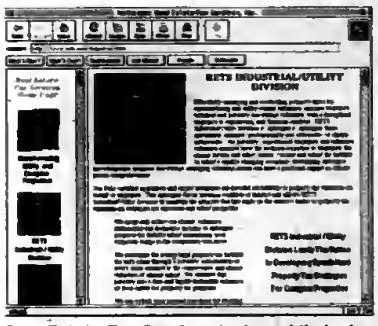

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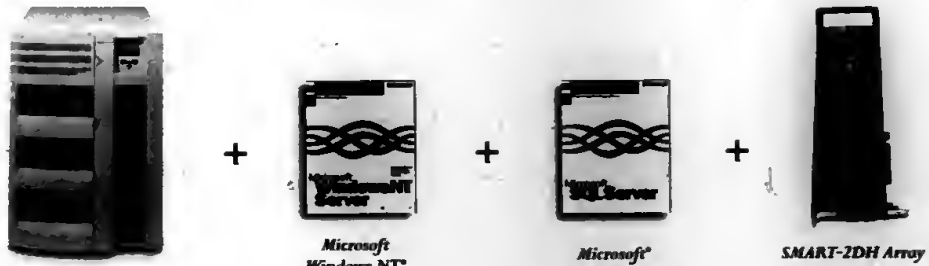

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70 Mining/Construction/Petroleum/ Refining/Agriculture
80 Manufacturer of Computers Computer Related Systems or Peripherals
85 Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
90 Computer/Peripheral Dealer/Dist./ Retailer
95 Other _____ (Please Specify)

2. TITLE/FUNCTION (Circle one)
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21 Dir./Mgr. MIS Services, Information Center
22 Dir./Mgr. Network Sys. Data/Tele Comm. LAN Mgr./PC Mgr. Tech Planning, Administrative Services
23 Dir./Mgr. Sys. Development, System Architecture
31 Programming Management, Software Developers
41 Engineering, Scientific R&D, Tech Management
60 Sys. Integrators/VARs/Consulting Management
CORPORATE MANAGEMENT
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12 Vice President, Asst. Vice President
13 Treasurer, Controller, Financial Officer
DEPARTMENTAL MANAGEMENT
51 Sales & Mktg. Management
70 Medical-Legal Accounting Mgt.
OTHER PROFESSIONAL MANAGEMENT
80 Information Centers/Libraries, Educators, Journalists, Students
90 Other Titled Personnel

3. Do you use, evaluate, specify, recommend, purchase (Circle all that apply)
Operating Systems
(a) Solaris (e) Mac OS
(b) Netware (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) NeXTstep
App. Development Products ☐ Yes ☐ No
Networking Products ☐ Yes ☐ No
Intranet Products ☐ Yes ☐ No

4. Which of the following products do you buy, specify, recommend or approve the purchase of? (Check all that apply)
(a) ☐ Internet software
(b) ☐ Internet browsers
(c) ☐ Web authoring/development tools

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60 Government - State/Federal/Local
65 Communications Systems/Public Utilities/Transportation
70 Mining/Construction/Petroleum/ Refining/Agriculture
80 Manufacturer of Computers, Computer Related Systems or Peripherals,
85 Systems Integrators, VARs, Computer Service Bureaus Software Planning & Consulting Services
90 Computer/Peripheral Dealer/Dist./ Retailer
95 Other _____ (Please Specify)

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22. Dir./Mgr. Network Sys. Data/Tele Comm. LAN Mgr./PC Mgr. Tech Planning, Administrative Services
23. Dir./Mgr. Sys. Development, System Architecture
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80 Information Centers/Libraries, Educators, Journalists, Students
90 Other Titled Personnel

3. Do you use, evaluate, specify, recommend, purchase (Circle all that apply)
Operating Systems
(a) Solaris (e) Mac OS
(b) Netware (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) NeXTstep
App. Development Products ☐ Yes ☐ No
Networking Products ☐ Yes ☐ No
Intranet Products ☐ Yes ☐ No

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Tax group runs to intranet

CONTINUED FROM PAGE 49

Corp., a professional services firm in Santa Clara, Calif., that has regional offices spread out across the country.

"We're developing an application that probably was too small for [Electronic Data Systems Corp.] or Arthur Andersen," Hoemke said. "US Web suited our needs, and the price was right."

The CEO first contacted US Web in July; Hoemke said he expects that by the end of October, RETS' intranet infrastructure will be in place and the first application — property tax analysis and reporting software — will be up and running.

"It's not highly unusual to deliver that fast with this sort of project," said Paul Johnston, an analyst at Framingham, Mass.-based International Data Corp. "The deployment of intranet services tends to be relatively quick. That's one of the attractive features of the technology. You don't have to wait a year and a half to reap the benefits of the investment."

Hoemke, a business manager, said he initially doubted that the Internet would be fast enough for his company to do any productive work. His experience using a painfully slow 28.8K bit/sec. modem from home certainly didn't sell him on the idea.

But Hoemke said he became convinced that the technology would be particularly helpful because of the ability of Microsoft Corp.'s Internet Explorer 4.0 browser to cache data locally

RETS agents now can carry around the database wherever they go.

rather than having to repeatedly request it from the server.

Internet Explorer 4.0 let users extract a set of information from a database, store the data in the browser's cache on the hard drive and display only the data subset needed. Without having to make a trip back to the server, users can make subsequent queries of the original data set, displaying additional information they want to access.

"You don't have to refresh pages every time you move from record to record," Hoemke said.

With Netscape Communications Corp.'s browser, users would have to rely on Java applets to perform similar functions via Java Database Connectivity or the Internet Inter-ORB Protocol/Common Object Request Broker Architecture.

On US Web's recommendation, RETS also will ditch its mainframes in phases, in favor of Microsoft's SQL Server. SQL Server allows easier communication between the desktops and database server, Hoemke said.

Users will access the data through a Web browser, pulling data out of SQL Server through Open Database Connectivity.

In the past, RETS was a decentralized operation. Workers used spreadsheets of their preference on their desktops and connected to the mainframe via leased lines. Now agents in the field will be able to carry the database wherever they go.

"We can hook up a cellular modem to a laptop and sit there in front of a client and say, 'Look what we can do for you,'" Hoemke said.

The company plans to set up an extranet next year. "That's just another version of the application," he said. "Once we get ourselves up and running and fully tested, we'll let clients leverage the data that we have for their own analysis." □

Ticket sites struggle for boffo sales

CONTINUED FROM PAGE 49

posing a surcharge for tickets purchased online.

"If ticket vendors can take advantage of the cost savings brought on by automation and pass those savings along to the consumer, consumers would take better advantage," Keenan said.

Forrester Research, Inc., a research firm in Cambridge, Mass., estimated that online sales to entertainment events totaled $25.9 million this year and will increase to $1.4 billion by 2000.

Winning the lion's share of those sales, with $3 million in sales in June alone, is Ticketmaster in West Hollywood, Calif.

The Ticketmaster site is run by a staff of 15 people. The site not only offers ticket sales, but it also offers entertainment news, concert information and sales of event merchandise, along with advertising.

Ticketmaster sees the Internet as a way to build a relationship with customers who have come for information and those who have come to buy something, said Alan Citron, vice president of electronic commerce at the company.

BROADWAY BOUND

New York-based Shubert wants to do for Broadway what Ticketmaster does for the concert stage. The company sells tickets online for shows at major theaters in New York, Boston and Washington.

Until early last year, Shubert sold tickets through *Playbill* magazine's World Wide Web site. Later, when sales increased, it launched its own site, linking to a mainframe-based telephone ticketing system.

"The initial foray with *Playbill* was to test the waters to see if there was a demand," said Dave Andrews, vice president of Shubert Ticketing Services. "We felt that there was a demand, and we had to build a site."

The MovieFone site gets 350,000 users every week; about 18% to 20% of the traffic is from people who call in to the company's phone line for information about movie times and locations, Blumberg said.

Of those callers, about 5% buy tickets. That's about a quarter of the sales its phone service gets, he said.

MovieFone wants to augment online revenue by selling its information to other sites.

For a flat fee, the company permits other sites to link to specific movie times and locations in its database.

The company has relationships with about 50 major movie studios and magazines, Blumberg said. □

IBM expands Net.Commerce line

By Mitch Wagner

At the recent Internet Commerce Expo in Los Angeles, IBM announced additions to its Net.Commerce products, a line of software servers designed to manage sales over the Internet.

They are Net.Commerce Start, a low-end version of the Net.Commerce server for small businesses, priced at $5,000; and Net.Commerce Pro for big businesses. The software lets users display groups of products with pricing, transact sales and arrange payment-processing and shipping, with connections to legacy systems. IBM also announced Net.Commerce SmoothStart, a small-business service that bundles Net.Commerce Start with the consulting, hardware and 'net connectivity needed to create a Web site. Pricing starts at $40,000.

And Pandesic LLC in Sunnyvale, Calif., a venture between Intel Corp. and SAP America, Inc., announced software that can be used to build sites that display a catalog of products with back-end connections to inventory, shipping and payment-processing software. It will cost $25,000. □

Wagner: Don't be afraid of a little E-commerce

CONTINUED FROM PAGE 49

orable. It's a transparent process, so there's not much to talk about. I typed in a few characters, clicked the mouse a few times and a little while later, I was the proud owner of ... whatever it was.

I continued to experiment, but somewhere along the way, it ceased being research for me. I was simply buying online because it was more convenient and more pleasant than doing things by phone, by mail or in person.

My main Internet commerce outlet is personal banking. Paying bills has always been my least favorite chore. Still, I hesitated when my bank, Wells Fargo & Co., introduced online bill payment. Just like any consumer, I was scared about the threat of Internet security when it came to my personal bank balance.

But then I thought about getting rid of the tedium of check-writing and envelope-licking. So I signed up.

Sign-up was tough. I had to type in the names and addresses of all my bill payees, which took about six hours. But since then, the process takes just a couple of minutes per month.

Some cynics charge that, in more than half the cases, there is no electronic bill payment going on. Employees of Wells Fargo write checks and drop them in the mail. My answer to that: Who cares? As long as I don't have to do it myself.

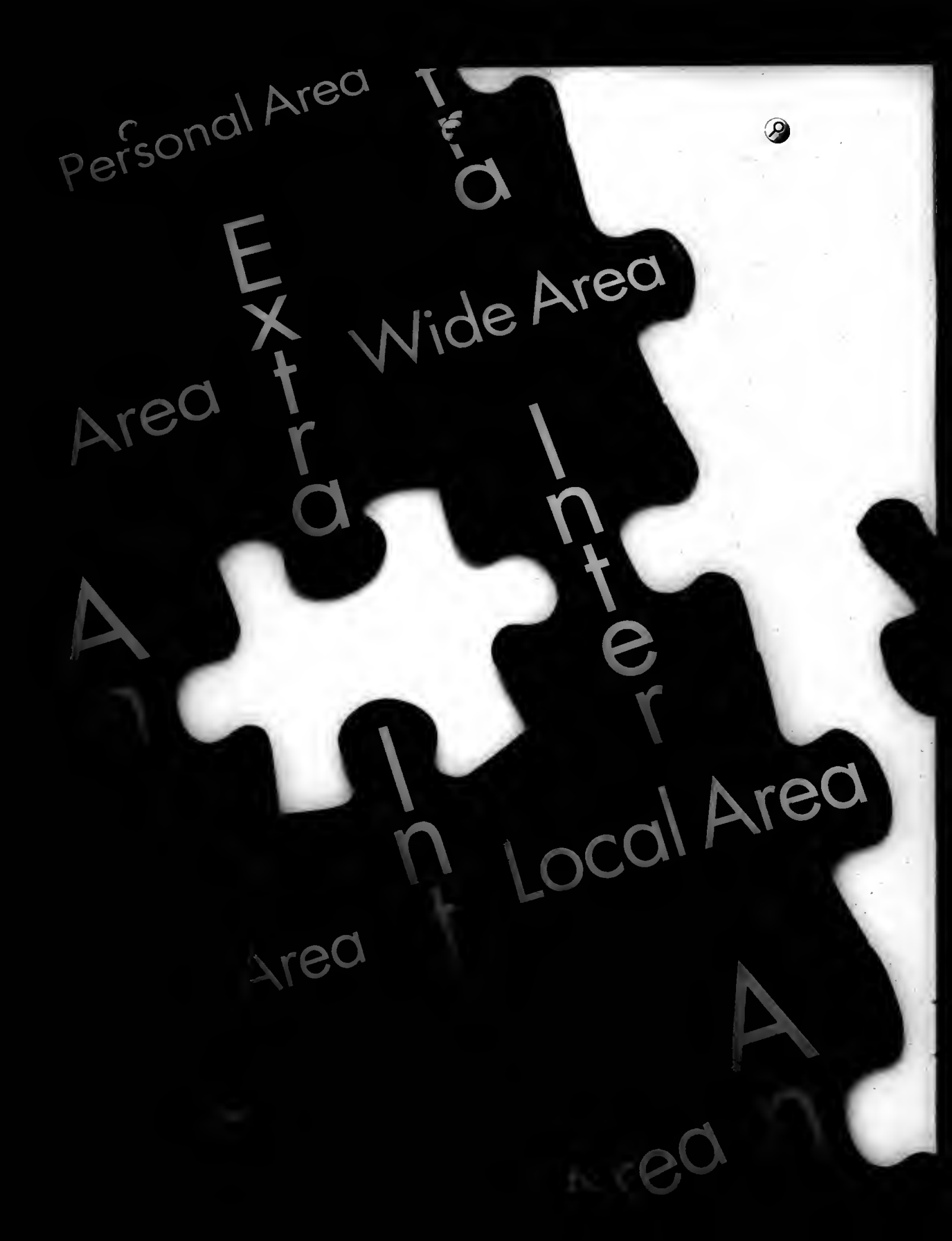
Lately, I'm on the Internet buying things about once a month or so: books, knickknacks, gifts, lots of shareware. It's pretty much the same as buying on the phone, just quicker and easier. I don't worry about security. Internet security has kept ahead of the desire and ability of crooks to steal money. Doing business on the Internet is a risk, but so is leaving your house with a pocketful of money. Cynics have what they think is a trump card when they argue against the feasibility of consumer business on the Internet. "It's so inconvenient," they say. "You can't find anything, graphics take forever to download, and it's just hard for the average person to figure the whole thing out."

Inconvenient? Compared with what?

Christmas shopping season is a few weeks away. E-commerce opponents will soon have an opportunity to enjoy the convenience of circling around the mall parking lot looking for a space, battling with crowds of crazed consumers and vying for a minute of attention from a stress-crazed cashier.

Meanwhile, I'll be doing as much Christmas shopping as possible on the inconvenient Internet, suffering through those downloads that can sometimes take a whole minute. □

Wagner is Computerworld's senior editor, electronic commerce and the Internet.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Area
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Check Point tool may help balance bandwidth

CONTINUED FROM PAGE 49

to fetch large circuit designs via file transfer protocol (FTP) from Synopsis' servers. But that task could take seven times longer than the usual five minutes while other less-urgent Internet exchanges took place, Qadri said.

The FloodGate-1 software regulated FTP traffic as promised, Qadri said.

He assigned a priority level so 70% of the bandwidth was allocated to incoming requests vs. 30% for activity by internal users, thereby balancing usage in favor of customers.

"I haven't heard complaints that customers are waiting for their file transfers," Qadri said, and his users aren't shut out entirely.

Similarly, customers looking for a company's World Wide Web site could take precedence over internal users surfing elsewhere.

It also is possible for users to apply FloodGate-1 at their Internet access points to prevent multimedia and push technologies from gobbling precious bandwidth. They can define policies that give internal Lotus Notes traffic priority over incoming PointCast traffic, according to product managers.

EQUAL ACCESS

Database developer Versant Object Technology, Inc. granted the same amount of bandwidth to users inside the firewall as it gave to those working outside, said beta tester Murali Kanaga, a senior network and systems administrator at Versant in Fremont, Calif.

"Equalizing access solved time-out problems we had when bandwidth choked and saved us from a costly performance upgrade," Kanaga said.

Check Point's Floodgate-1 requires no specific hardware. It can run on one server with software modules running at different access points

Similar control is possible using other approaches. For example, Packeteer, Inc. in Campbell, Calif., offers a hardware/software combination called PacketShaper. It can set policies for traffic flowing through individual devices that connect to routers.

FloodGate-1 requires no specific hardware. It can run on one server with software modules running at the desired access points.

But Check Point recommends installing FloodGate-1 on its FireWall-1 systems for efficiency, so both functions can share the packet-inspection process and a common database of state-related information about network communications.

FloodGate-1 won't be available until next quarter. It runs only on SunSoft, Inc. Solaris servers, and its management interface runs on Microsoft Corp.'s Windows NT and Windows 95 workstations. Check Point promised support for other Unix systems and Windows NT Server in the first quarter next year.

The product is priced according to bandwidth level. It starts at $4,995 for dial-up lines up to 256K bit/sec.; $9,995 for T1 and E1 lines; and $18,900 for 10M bit/sec. networks.

Promotional discounts are available through February 1998. □

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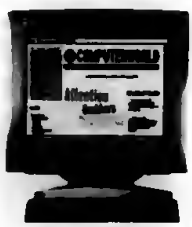
DAY

Listen, when it comes to seeking, finding and delivering the latest-breaking IT news, no one holds a candle to our painstakingly diligent writers and editors. Be that as it may, the esteemed and hallowed pages you hold in your hand, are in fact, weekly pages.

Which means if we go to press on Sunday, and a vendor slashes prices or a trade show keynoter puts his foot in his mouth on Monday, there will be no pithy headline, no meaningful analysis, no press-release photo — until next week's issue.

And we know a lot of you IT leaders don't want to wait that long. (Hell, a lot of you order drip coffee 'cause you don't want to wait for a latté.)

You went today's IT headlines, well, today.



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The Enterprise Network

LANs • WANs • Network Management

Briefs

Breakdown of operating systems used for plant operation

Operating license revenue: $2.1 billion

- Unix
- Windows NT Server (multiuser)
- Windows 95 and single-user Windows NT
- OpenVMS
- DOS/Windows 3.x
- Other

Source: Advanced Manufacturing Research, Boston

Navy plan takes intranet to war

▸ *Will distribute data via NT-based PCs*

By Sharon Machlis

DURING THE Gulf War, the U.S. Navy distributed its battle plans by making paper copies of the 6-inch-thick documents and flying them to each ship, according to Cmdr. Jack Papp with the Third Fleet.

Now, the Navy is computerizing everything from how it distributes tactical data to how it selects targets and tracks ships in the fleet. And its plans for fighting future wars hinge on the same technology corporate America uses on its desktops: Pentium-based PCs running Windows NT with an IP network and standard World Wide Web browser. The Navy's network, however, is classified and completely separate from the public Internet.

The Navy is moving to Windows NT from Unix-based systems for many of the same reasons the Microsoft Corp. operating system is attractive to the private sector. Price is one of them. The NT hardware the Navy uses to display ship locations, for example, costs one-third less than the specialized Unix boxes it used before, said Mike Mankouski.

> Using custom-designed applications the fleet can distribute battle plans with the push of a button.

Mankouski is chief radioman for surface warfare and Information Technology for the 21st Century project officer aboard the Third Fleet's command ship, *USS Coronado*.

The new systems cut training time because the interface is similar to Windows 95, which many users in the Navy already know how to operate. Administration is also somewhat easier compared with Unix, which requires more specialized instruction, he said.

The Navy has cleared out space to install about 240 PCs on the *Coronado* so far. It plans to install 350, making the ship the Navy's most advanced command and control platform, Papp said. "This is all very new," Mankouski said.

Using a satellite network that collects data from navigation and tracking systems, officers can display on their PCs the location of every ship in the fleet. And battle plans can be distributed with the push of a button, using both shipboard local networks and wide-area networks, Papp said.

Navy, page 60

Novell eases NetWare/NT integration

By Laura DiDio

NOVELL, INC. last week released enhanced versions of two tools that improve the integration between NetWare and Microsoft Corp. Windows NT networks to reduce administration time.

New versions of the Novell Administrator for Windows NT and Novell Application Launcher are 30% faster and more closely integrated with Novell Directory Services (NDS), giving them better access to files.

The Provo, Utah, company also has extended indefinitely its six-month free trial offer for the applications but wouldn't commit to distributing the products free permanently. Novell Application Launcher, introduced 18 months ago, uses NDS to let network administrators automatically give users access to software residing on servers and restrict end-user access to certain applications. Users who have access rights to an application can use Novell

Novell, page 60

E-mail specs battle for dominance

By Barb Cole-Gomolski

IT'S LOOKING MORE and more like there will be dual standards for electronic-mail encryption and digital signatures — and that has users worried.

The Secure/Multipurpose Internet Mail Extensions (S/MIME), which is based on technology from RSA Data Security in Redwood City, Calif., appears to be getting back on track after being derailed from the Internet

E-mail, page 60

S/MIME VS. OPEN PGP

	Strengths	Weaknesses
S/MIME	• Widespread support from messaging vendors	• Based on proprietary technology from RSA
S/MIME	• Support in several mail packages, including Netscape Communicator	• Poor interoperability among S/MIME-compliant products
Open PGP	• Based on technology in the public domain	• Not currently supported in any products
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The Enterprise Network

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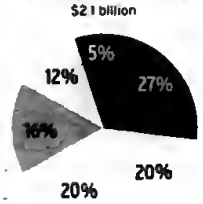

Source: Advanced Manufacturing Research, Boston

56K standard delayed

A common technical standard for 56k bit/sec. modems won't be implemented any time soon because the International Telecommunications Union (ITU) has put off a vote on a standard until January. ITU members apparently want the two companies with the modems to share some of their patented technology. Those companies are 3Com Corp. in Santa Clara, Calif., which recently purchased U.S. Robotics, Inc., and Rockwell International Corp. in Seal Beach, Calif.

Network monitoring

LANQuest, Inc. in Fremont, Calif., recently released NetClarity, a browser-based enterprise network performance monitoring tool that provides preventive maintenance for data traffic performance. It lets administrators capture an end-to-end picture of their network traffic behavior statistics by combining Remote Monitoring and a standard World Wide Web browser interface. NetClarity is shipping now. It costs $9,900 for an eight-LAN segment version.

Navy plan takes intranet to war

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By Sharon Machlis

The U.S. Navy will install 350 PCs on The USS Coronado to track ships and distribute data

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Novell, page 60

Novell eases NetWare/NT integration

CONTINUED FROM PAGE 59

Application Launcher to launch it from their desktop, rather than having to log on to the server hosting the application.

Novell Administrator for Windows NT has been shipping for about 10 months. It provides IS managers with a single point of administration for supporting users and groups in mixed IntranetWare and Windows NT Server environments.

Michael Gaskin, senior network engineer at Community Hospitals of Central California in Fresno, said Novell Application Launcher has proved such a valuable asset to his organization of 2,000 users in a mixed NetWare and NT environment, that he would use it even if it weren't free.

"If Novell put a $20,000 price on [Novell Application Launcher] and the Novell Administrator for Windows NT, I'd still be able to sell them to my CIO in a minute. They provide incalculable management savings in terms of time and dollars," Gaskin said.

Gaskin said it took him and a team of five network administrators two weeks to set up and configure new NetWare networks and new users' desktops in one of its hospitals without using Novell's launcher. "With [Novell Application Launcher], I was able to assign one person to do it, and he was finished in two days. That's a tremendous savings because we pay our network administrators an average of $65 per hour, and the fact that we didn't have several managers tied up meant they could concentrate on other tasks," Gaskin said.

SAVING TIME

Tadd Moore, a systems engineer at Citicorp in St. Louis, said new functionality in Novell Application Launcher that enables him to automatically troubleshoot and fix problems within applications also has proved a timesaver.

For instance, if an application is defective, the end users can call the help desk and be instructed to click on an icon and simply reinstall the application. That eliminates end-user downtime and the need to assign a network administrator to fix the problem.

"The combination of the two products has saved me an enormous amount of grief," Moore said.

Both Moore and Gaskin said that similar functionality is available in Microsoft's Systems Management Server (SMS) — but at a much higher price. "It would have cost us at least $150,000 on hardware and software licenses to implement SMS," Moore said.

Aside from the cost, Gaskin said he found "SMS and Microsoft's new Zero Administration kits much more complex to use than [Novell Application Launcher] and the Novell Administrator for Windows NT."

Both packages can be downloaded free from *www.novell.com/novellsw/brands.html*. □

Features in Novell Application Launcher 2.01 and Novell Administrator for Windows NT 2.0

- 30% increase in throughput and synchronization
- Supports English, German and Japanese
- Price: free

3Com unveils switch with built-in routing

By Bob Wallace

3Com Corp. has announced a switch that combines some routing functions to let information systems managers expand campus networks with minimal complexity.

The product uses Layer 3 switching, which makes network design simpler by reducing the number of routers needed.

Layer 3 switches are available from most major vendors and some start-ups. And they have caught the eyes of many IS managers.

"We've built a switched network to run our business systems, process control and manufacturing operations, and we're looking at 3Com's 3500 [Layer 3 switch] because we don't want to get into routers," said Avery Hancock, technology leader at Alcoa Work Operations in South Newburgh, Ind.

"We also want to avoid adding complexity in our network," he said.

3Com's CoreBuilder 3500 Layer 3 switch will ship in November at a base price of $8,995. It can route IP and IPX traffic and can be connected via modules to Fast Ethernet, Asynchronous Transfer Mode and Fiber Distributed Data Interface backbone networks. □

E-mail specs battle for dominance

CONTINUED FROM PAGE 59

Engineering Task Force (IETF) standards track last month. The S/MIME work was called into question after backers missed a deadline to submit a request to form an IETF working group. Seizing the opportunity, a rival group, led by RSA competitor, Pretty Good Privacy, Inc. in San Mateo, Calif., quickly assembled and proposed a new specification, dubbed Open PGP.

But S/MIME backers held a developers' workshop earlier this month, and sources who attended that meeting said the S/MIME work will be submitted to the IETF within a month.

With both efforts apparently on the standards track, industry watchers and users said it is likely that the outcome will be dual specifications.

"The vendors involved are cutting their own throats," said Glenn Newell, senior engineering manager of intranet technology at National Semiconductor Corp. in Santa Clara, Calif. Newell said having two well-established specs that don't interoperate could keep sites from deploying either technology.

National Semiconductor has already begun testing with S/MIME, which is implemented in its Netscape Communications Corp. World Wide Web browsers. But Newell said it concerns him that browser users at National Semiconductor couldn't easily exchange secure messages with users of San Diego-based Qualcomm, Inc.'s Eudora because Qualcomm uses Open PGP.

Both S/MIME and Open PGP have the potential to bring some much-needed security to Internet messaging, users said. But the specs won't work together because they use unique encryption methods and handle digital signatures differently.

USER CONFUSION

Paul Hoffman, co-chairman of the Internet Mail Consortium industry group in Santa Cruz, Calif., said it would be easy for E-mail vendors to support both specifications in their E-mail products.

"The problem is that end users won't know which specification the person they are sending E-mail to is using," he said. Users encrypting a message using one protocol would risk losing the message if the recipient's mail client was set to decrypt it using the other one.

"This would not be the first time that products needed to support more than one standard," said Mark Levitt, research manager at International Data Corp. in Framingham, Mass. Levitt pointed out that the Internet's Simple Mail Transport Protocol X.400 and other proprietary protocols for exchanging E-mail are widely supported in today's products.

Frank Manci, network technical manager at Colonial Savings FA in Fort Worth, Texas, said that with backers such as Netscape and Microsoft Corp., which will add S/MIME support to Internet Explorer by year's end, S/MIME is likely to become the de facto standard. □

Navy plan takes intranet to war

CONTINUED FROM PAGE 59

In one recent test, a PC-based network was used to help identify, select and take out "enemy targets." Earlier this month, a Navy special forces team member homed in on the "target" using a global positioning system and laser designator. That commando on the ground typed up a description of the target on his handheld electronic device and snapped digital photos of the proposed "enemy" site.

He transmitted the data via radio to a satellite and then back to the *Coronado*, where it was posted on a classified Naval Web site and then analyzed. A computer program proposed several options to destroy the target, depending on what forces were closest and what weapons they carried. A human, though, made the final selection.

The digital photos were then enhanced and sent to an F/A-18 fighter jet, allowing the pilot to see an image of the target while flying the mission.

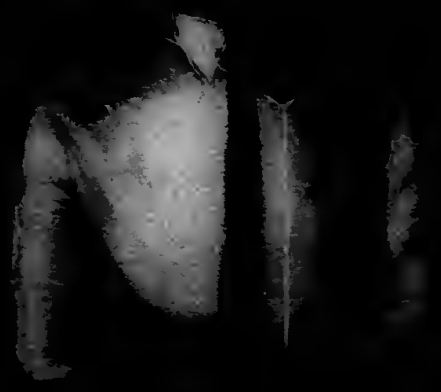
Some may be queasy about whether security offered by off-the-shelf operating systems is adequate for defense use, but corporate America may benefit from the military's push to use commercial technology, according to Jerry Mechling, director of Harvard University's Strategic Computing in the Public Sector program in Cambridge, Mass.

TIGHT SECURITY

Security typically has been a secondary demand of private-sector users, who tend to push vendors more to lower costs, boost reliability and simplify administration and training overhead. The military, however, will want increased security — and it carries a fair amount of weight with its substantial financial muscle.

That influence could drive vendors to increase security, which is a benefit during a time when increasing numbers of corporate users need better security because of Internet connections and electronic-commerce offerings.

But whether the system is NT, Unix or a specialized proprietary invention, Mechling said, "there's no perfect solution out there." □



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Tools let IS analyze server resource usage

▸ *Puts cost management in users' hands*

By Patrick Dryden

MANAGEMENT TOOL vendors are extending resource accounting capabilities from the mainframe to the world of distributed servers.

The goal is to help information systems managers control usage costs from the data center to the departmental servers.

For example, last week Platinum Technology, Inc. introduced a version of its chargeback and capacity-reporting tool for MVS systems that reaches out to other platforms. The new CIMS Enterprise-wide Resource Management software can also track usage of OpenVMS, Unix and Windows NT systems.

The IS arm of Yellow Freight System runs CIMS to analyze its mainframe workload and wants to get the same sort of capacity-planning information from the client/server arena, said Dave Upp, senior performance analyst at Yellow Services, Inc. in Overland Park, Kan.

"Chargeback is a dirty word, but this tool will let us put the budget decision in users' hands," Upp said. "They can pay more to run the job immediately or wait to use available resources during the third shift."

The bottom-line appeal is clear. "We should be able to delay every processor upgrade for the mainframes and for Unix systems, too," Upp said.

OTHER VENDORS CAN HELP

Also addressing that need are enterprise management vendors such as Candle Corp., Computer Associates International, Inc. and Tivoli Systems, Inc. Other vendors such as BGS Systems, Inc. and Landmark Systems Corp. specialize in multiplatform performance management.

> Chargeback is a dirty word, but [Platinum's CIMS software] will let us put the budget decision in users' hands.
>
> – Dave Upp, Yellow Services

But few IS managers have the need to analyze server resource usage in such a sophisticated way.

"There's not a screaming demand in the distributed space because organizations commonly run one application per server," said Herb VanHook, an analyst at Meta Group, Inc. in Stamford, Conn.

System log files and application audit trails may provide sufficient information, according to VanHook.

IS planners may also find resource management irrelevant for now because they allocate servers per department or remote office.

Allstate Insurance Co., for example, has 12,000 locations equipped with IBM AS/400 systems. More immediate needs include inventory, software distribution and remote management of diverse systems, according to Donny Lippard, assistant vice president at Allstate in Northbrook, Ill.

Labor to manage all the systems in a distributed environment takes a far bigger bite out of IS budgets than the cost of upgrading shared hardware resources, according to Paul Mason, an analyst at International Data Corp. in Framingham, Mass. "When organizations start consolidating servers, then resource management may become more of an issue," Mason said.□

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LTV Steel Company ***ROI=16,995%***

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Phillips Petroleum Company Norway ***ROI=151%***

As a leader in the high-stakes oil and gas industry, Phillips Petroleum relies on its SAS Data Warehouse for an up-to-date picture of company health and safety trends. "With the help of data warehousing, we have an overview of all the 'criticality' factors involved in the daily operation of oil producing platforms," says Incident Analyst Pål Navestad. "In addition, historical data makes a great contribution to cost-efficient design and redesign of our facilities. This knowledge tells us which preventive measures are most effective for increasing revenue and profitability. Quite simply, our SAS Data Warehouse helps to reduce injuries and saves money."

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Software

Databases • Development • Operating Systems

Briefs

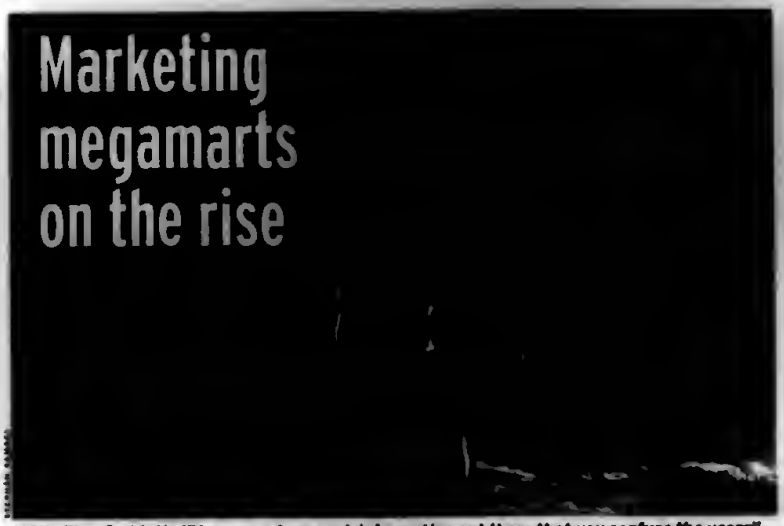
What types of applications are you running on thin clients?

Internet/browser	38%
Microsoft's Office/BackOffice	32%
DBMS	27%
Personal productivity	26%
Accounting	22%
Development tools	20%
Unix applications	19%
3270 applications	10%
AS/400 applications	8%
Legacy applications	6%

Base: 90 IS managers; multiple responses allowed

Source: Zona Research, Inc., Redwood City, Calif.

Marketing megamarts on the rise



MCI's Stan Sudduth: "You can get so much information out there that you confuse the users"

By Craig Stedman

MARKETING DATA MARTS may have a nice, small sound to them. But don't be fooled.

Pushed by stiff competition and the nearly insatiable analysis demands of end users, many companies are finding their marketing databases approaching the size of full-fledged data warehouses. In some cases, data marts set up for marketing departments are pushing toward the terabyte level.

That forces the information systems departments that support those megamarts to worry about many of the same issues that bedevil corporate data warehouses. Querying across the full pool of transaction records and customer information becomes dicey, and IS has to be on guard to keep response times, database backups and data updates from getting swamped.

"Good marketing really requires having access to most of

Megamart, page 68

SOFTWARE SYSTEMS

Corning bets big on PeopleSoft

By Randy Weston

CUSTOMER SERVICE is everything to Corning, Inc.

So much so that the giant glass and ceramics maker chose PeopleSoft, Inc. and its untried manufacturing software system to run Corning's business over more established vendors in the market such as Oracle Corp. and SAP AG.

"It was a major bet for this $4 billion organization," said Steve Cooper, director of strategic informatioo systems at the Corning, N.Y., manufacturer. "We knew we would have little influence with SAP, so we said forget them, for cultural reasons. We did have some influences with Oracle, but we knew we had significant influence over the product at PeopleSoft."

"PeopleSoft's values align with ours"

Analyst Joshua Greenbaum at Hurwitz Group, Inc. in Newton, Mass., said most companies are reluctant to be on the cutting edge by using a vendor's untested technology, but those that do can reap great rewards.

"Only a couple of companies

Corning, page 68

NT storage software leaders ramp up features

By Nancy Dillon

THE TWO BIGGEST Windows NT storage software vendors are coming out with new releases to give smaller-scale systems more mainframe-class features.

Seagate Technology, Inc., which holds 42% of the NT storage software market, according to International Data Corp. (IDC), last week announced its Backup Exec for NT Version 7.0. Computer Associates International, Inc., which holds 28%, will announce ARCserve 6.5 for NT at the end of this month.

STORAGE MANAGEMENT

Backup Exec 7.0 from Scotts Valley, Calif.-based Seagate is the first enterprise backup package built using Microsoft Corp.'s Component Object Model (COM), which lets application developers build and reuse distributed software components.

But analysts said the new features in ARCserve 6.5 will vault Islandia, N.Y.-based CA into the functionality lead.

Philip Mendoza, a storage analyst at IDC in Framingham,

Storage, page 68

Microsoft Outlook alters PIM market views

By Gordon Mah Ung

WHEN MICROSOFT CORP. included the hybrid electronic-mail client and personal information manager (PIM) Outlook 97 with every copy of Office 97 earlier this year, some pundits were quick to say the Redmond, Wash., giant had stamped out another segment of the software industry.

Nine months later, analysts, competitors and some users say the demise of the PIM market was greatly exaggerated.

"You would have thought [Outlook] would have wiped out the smaller companies," said Kaoru Ayaki, an organizer product manager at Day-Timer Technologies in San Mateo, Calif. "Consumer needs are different. Microsoft Outlook is not going to wipe us out."

The oumbers show a different tale. Retail shipments of business PIM software have steadily dropped, according to figures from market research firm PC Data, Inc. in Reston, Va. In 1994, 909,470

Outlook, page 72

Outlook was designed to incorporate E-mail, group scheduling and information management into one package

Software

Databases • Development • Operating Systems

Briefs

Sun speeds Java

Sue Microsystems, Inc. is promising greater speed with the latest version of its Java development tool. Version 2.0 of Sue's Java Workshop, now available for download, was designed to create applications that run 15 times faster than before, Sue executives said. Rival Microsoft Corp. has criticized Java Workshop for building sluggish applications compared with Microsoft's own Visual J++, which is generally considered the fastest tool on the market.

Boole pro-Microsoft

Boole & Babbage, Inc. has extended its CommandMQ management software to support Microsoft Corp.'s middleware product MSMQ. The CommandMQ software already provides central management for IBM's popular MQSeries middleware. Both packages need central control because they provide more interconnection among multiple applications. Microsoft's MSMQ is built in to Windows NT and provides middleware services for that platform only. Boole & Babbage in San Jose, Calif., will ship the MSMQ agents for CommandMQ next month, with prices starting at $600.

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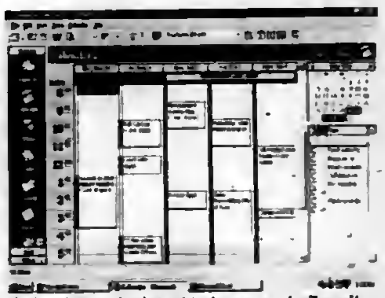

Outlook was designed to incorporate E-mail, group scheduling and information management into one package

SUN

DEC

(You'd be surprised at all the connections you

If, by chance, you're not surprised at how open IBM Serial Storage Systems manage to be, then their remarkable performance will raise an eyebrow or two.

First, these open disk systems are designed to connect to UNIX® servers, including HP, Sun and DEC. And NT servers, like HP and Compaq. Not to mention IBM systems, too.

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can make with IBM Serial Storage Systems.)

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Megamart growth rivals warehouses

CONTINUED FROM PAGE 65

the data in an organization," said Randy Grossman, senior vice president of customer data management and analysis at Fleet Financial Group, Inc. in Boston. "But it's an extraordinary technical challenge to try to anticipate the right way of structuring and storing the data."

Fleet is building a 1T-byte data warehouse and a companion marketing data mart that will start out at 500G bytes when all summaries and special data views are counted. "That's hardly skimnying it down," Grossman said. To keep performance from choking, Fleet is off-loading heavy-duty statistical analysis to a separate data mart.

Negotiating with end users over what goes into data marts "is just absolutely critical," said Stan Sudduth, manager of analytical services at MCI Communications Corp.'s data center in Colorado Springs. "Users will want everything, especially on the marketing side. But we know that there is [data] they'll never use."

MCI has 2.5T bytes of sales and marketing information in its corporate data warehouse. To facilitate end-user querying, the company tried to build a single data mart for analyzing customers down to the household level. "But that was basically just a little data warehouse," Sudduth said. "Query times were literally running in the hours."

Earlier this year, MCI changed course and started building multiple data marts — 16, at last count — that each stay under the 100G-byte level. That has improved performance and data preparation and loading, Sudduth said.

Other companies started small with marketing data marts but now are watching them grow. And grow.

Charles Schwab & Co. now fits its marketing database on a PC server with about 45G bytes of disk space. But the San Francisco-based brokerage is developing a more expansive data mart that could reach 1T byte by the end of next year.

Schwab plans to use the data mart to target different promotions at investors based on their market savvy, said Mary Kelley, vice president of database and relationship marketing. To avoid query gridlock, she said she is looking at splitting the data mart into a series of customized data views and limiting the spread of ad hoc analysis tools

Many users "just need canned reports, and I don't want them getting into the database and running queries," Kelley said. "Trying to get everything in one size will not fit all." □

& Experts see value and flaws in prepackaged data marts. Buyer's Guide, page 99

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For these and other related links, point your browser at www.computerworld.com/links/1www.cgi?ALL/97sep.shtml

- Plan for data marts
- Learn the risks of marts
- Data marts: One is great, more is a disaster

Storage leaders ramp up features

CONTINUED FROM PAGE 65

Mass., said Backup Exec's COM basis may tempt users who seek tighter integration with NT. But those buyers generally make purchase decisions based on features, not architecture, he said.

"As far as high-performance features go, ARCserve definitely has more to offer in this release," Mendoza said. "COM will have to deliver on its promise of faster product development [for Seagate's product] to be able to close the features gap with ARCserve."

BACKUP'S FEATURES

New features in Backup Exec 7.0 include data compression for faster backup of remote servers and device pooling that sends backup jobs to the first available drive. A disaster recovery feature lets users restore data up to the point of the last backup without having to reinstall the network operating system.

"Before this version of Backup Exec, we had to reinstall the operating system and the drivers for backup before we could recover the files on the system," said Kevin Legrow, a senior network administrator at State Street Corp. in Quincy, Mass. "Now we can boot from floppies, and this cuts our disaster reaction time down by up to one and a half hours."

ARCSERVE'S FUNCTIONS

ARCserve 6.5 shares those new capabilities in disaster recovery, data compression and device pooling. But it also includes support for RAID mirroring capabilities in tape libraries, data encryption and a hierarchical storage management data migration feature for Windows NT.

Tod Beardsley, a systems administrator at World Wide Web design firm Tiger Leaf Communications, Inc. in Pittsburgh, said he likes the encryption feature best in ARCserve. He manages a dozen workstations connected to three servers, one of which resides four miles away on an Internet service provider's site.

"I have a security fetish because I don't know what security is like at the [Internet provider], and we have sensitive stuff on that server," Beardsley said. "I wouldn't mail postcards with client payment information on them, so encryption of the data I back up makes me feel much more secure."

The enterprise editions of Seagate's Backup Exec 7.0 and CA's ARCserve 6.5 each cost $1,395. □

ARCSERVE 6.5 VS. BACKUP EXEC 7.0

	ARCserve 6.5 for NT	Backup Exec 7.0 for NT
Enhanced disaster recovery	✓	✓
Compression	✓	✓
Encryption	✓	
Tape library RAID	✓	

Corning picks PeopleSoft

CONTINUED FROM PAGE 65

ever get to play that kind of [early adopter] role," Greenbaum said. "There should be a payback if you are going to take that risk, and that is [the software] should work well for you."

Cooper said he expected Corning to build on its Oracle applications, but his managers developed a rapport with PeopleSoft's group. "The PeopleSoft manufacturing team came to visit us, and they had no product. It was vaporware. But [Corning's] manufacturing [system selection] team said, 'We think we can work with PeopleSoft's vision of where they want to go.' Culturally and ethically, PeopleSoft's values align with ours."

Greenbaum said landing Corning was a major coup for PeopleSoft, which needed a large account to prove its new manufacturing module released in December could handle Fortune 500 companies.

Corning's budget for the information technology project is $125 million. Of that, about 5% is for software licensing, another 5% is for hardware upgrades and 60% to 70% is going to consultants. The remaining 20% is for bonuses and incentives for the staff involved in the project, Cooper said.

And although Corning expects some control over the direction PeopleSoft takes its product, Cooper said his office knows this kind of partnership isn't easy. "We view this as a marriage," he said. "Marriages have squabbles from time to time. We know it is a technology challenge. We expect bumps. We expect problems. We expect hardships."

One snag Corning hit was modifying the purchasing and inventory management systems in Version 5 of the PeopleSoft application. Cooper said it "was inadequate for a corporation with the size and complexity of Corning."

"If you have a centrally managed inventory environment, the software is fine," Cooper said. "But we do a significant amount of inventory movement between sites, buying and selling inventory throughout our business. That complexity is not part of the [PeopleSoft] product, and we didn't realize that. It was painful modifying it to handle that."

GETTING CLOSER

Although the current Version 6 of the PeopleSoft application meets about 80% of Corning's needs, Version 7.5, due in the first half of next year, will meet closer to 90%. Cooper said he expects Version 11, which is in early planning stages, to likely have all of what Corning wants.

Corning is testing the manufacturing module at its photonics division in upstate New York, which makes repeaters and amplifiers for fiber optics. It will go live in the first quarter of next year.

Cooper said the PeopleSoft software comes up short in its demand planning piece. He said Corning's forecasting needs are complicated because the company uses materials from several sourcing sites in Europe, South America and the U.S.

Cooper said he expects Version 7.5 to give Corning that functionality. □

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REVIEW▶ *Anyware Office*

Suite makes best of Java

By Ross M. Greenberg

APPLIX, INC.'s Anyware Office is a Java office suite that provides standard applications such as word processing, three-dimensional spreadsheets, database access and electronic-mail to any Java-enabled display device. I was impressed with how well this business suite was designed. It works and is a good example of Java's usability across the enterprise network.

Only the one-third of the Applix code that runs on your workstation or network computer is written in Java. The rest runs on the server and is written in C or Applix's proprietary Extension Language Facility (ELF), a byte-interpreted, portable, C++-like language. The performance issues with Java dictate this schism. Compiled, compute-intensive applications run better on a central server, with only the results sent across the network to be interpreted and displayed by the local Java client.

To test Applix's server product, I used a beta release of its Windows NT server code. The beta installed and ran cleanly. Portions of Anyware, such as the WYSIWYG development tool Builder, are available only on the server.

Designing new applications with Builder, including applications hooked to real-time database engines, is a snap. Developers may groan at learning yet another language, but ELF's C++ heritage makes it simple for experienced programmers. I created a simple real-time application that displayed comparative stock prices and automatically sent E-mail when prices moved more than half a point. Using demo code as a template, learning ELF, modifying the template, building a new interface, debugging and having working code took less than a long programmer's day.

I tested the client portion with an Intel Corp. 486-based machine with 16M bytes of memory. Microsoft Corp.'s Internet Explorer 4.0 (beta 2) and Netscape Communications Corp.'s Navigator 4.0 (beta 2). My results were mixed. Some things were wonderful, such as having a transportable spreadsheet with power to spare. Some things need to be taken behind the woodshed and whipped. Although the interface is consistent within Anyware, it is needlessly different in some areas, which makes training costs a concern.

Applix's problems are complicated by the fact that Java itself and the particular Java implementation used make it hard to find the cause of trouble. For example, when resizing a column in an Anyware spreadsheet under Navigator, other columns had overprint problems, which made that column unreadable until I refreshed the screen. Internet Explorer fared better in that area, but it was unable to easily save files created with the Hypertext Markup Language (HTML) design tool on the server. I don't know if the browsers' Java implementations were buggy or if there were Applix bugs.

All parts of the suite support linking and embedding of real-time feeds as well as a variety of SQL/Open Database Connectivity-based database sources.

Anyware's Words application is excellent, providing traditional document processing and HTML/World Wide Web page editing. But the Java "sandbox" — the safety zone in which Java applications are executed — requires both imported and exported files to be located on the server.

Anyware also includes a full-featured E-mail client, named Mail, with filtering rules based on sender, recipient and even content information.

Anyware currently requires Netscape Server for user authentication. But next month's release promises to remove that dependency, allowing for other authentication methods such as those included in Microsoft's Internet Information Server. Pricing per seat is generally in line with other server-based office application suites.

With the exception of the problems that were likely dependent on Java itself, Anyware is an admirable undertaking, done well. The ability to create your own Anyware applications, combined with its standard release applications, should leave even your developers happy. □

PRODUCT REVIEW▶
Anyware Office

GRADE: A

Applix, Inc.
Westboro, Mass.
www.applix.com
Base price: $4,995 (server); $295 per concurrent user (client)

Pros:
- **100% Pure Java certification**
- **Advantages of server-based application suite**
- **Good word processor/HTML WYSIWYG editing**
- **Easy real-time/database connectivity**
- **Good application design tools**

Cons
- **Dependent upon local Java implementation**
- **Difficult to make server-to-PC file transfers**

Greenberg is a reviewer and developer in New Kingston, N.Y. He can be reached at greenberg@ramnet.com

REVIEW▶ *Assorted utility software*

Valuable tools can plug up operating system gaps

By Chris DeVoney

UTILITY SOFTWARE can plug the gaps left in a computer's operating system. But as the operating system matures, the gaps shrink. The following packages aren't suitable for every user, but each utility can be indispensable to those who need it.

TAKE COMMAND

If you live in the imperfect world between DOS and Windows, JP Software, Inc.'s Take Command ($79) is Windows' little helper.

As an alternative command interface, Take Command (with versions for Windows 3.x, 95, NT and OS/2) melds its rich collection of command line and batch file extensions with the Windows world. Commands can be quickly typed, edited and reissued. Batch files can have complex conditionals and loop statements. Batch debugging tools also premiere in the new version. Directory and file names are completed with a single press of a function key and, unlike the Windows 95 command line, you can see and use long file names.

Not everyone needs the product. Take Command is most appropriate for programmers, support people, NT computer center operators and true power users — people who perform many command lines functions and computer housekeeping tasks or find the Windows Explorer too slow or too clumsy. Take Command is a license to be productive.

PRODUCT REVIEW▶
Take Command

GRADE: A

JP Software
East Arlington, Mass.
(800) 368-8777
www.jpsoft.com
Price: $79

ProComm Plus 32

GRADE: B+

Quarterdeck
Marina del Ray, Calif.
(800) 354-3260
www.quarterdeck.com
Price: $149

Qemm 97

GRADE: B-

Quarterdeck
Price: $69

PROCOMM PLUS 32

Years ago, local bulletin board services (BBS) were the cybersites of choice and ProComm Plus from Datastorm Technologies, Inc. was the communications software of choice. The World Wide Web is replacing BBSs, Datastorm is now part of Quarterdeck Corp., and ProComm Plus 32 ($149) remains a good choice, although for a smaller audience.

In addition to excellent terminal emulation, data transfer, faxing and full scripting language capabilities, the new version adds both network and dial-up Internet tools, including Microsoft Corp.'s Internet Explorer 3.0 browser and clients for file transfer protocol, Telnet, electronic mail and newsgroup clients. Additionally, the remote control services of RapidRemote are part of the package.

This fully 32-bit version finally acknowledges that Windows NT 4.0 and Windows 95 exist, integrates more closely with Windows' Technology Attachment Packet Interface capabilities and doesn't suffer the bulkiness of its previous versions. Additionally, you can install or jettison individual components that already exist on your system, such as fax software.

As the world becomes more Web-ified, Windows' built-in communications satisfies most users. But for the minority that requires broad dial-up capabilities, such as BBS access and terminal emulation for corporate network access, extras such as faxing, remote control or a single program that covers all Internet activities, ProComm Plus 32 is a winner.

QEMM 97

In the bad old days of DOS, there were several types of memory, and you could never have enough. To the rescue came programs such as Quarterdeck's Qemm 97, which solved many memory problems. But few Windows 95 users should care.

For those who run DOS or Windows 3.x, the product juggles memory, device drivers and DOS itself so that your programs get access to as much RAM as possible. The same tricks also help Windows 95 users if they must run old programs in the MS-DOS exclusive mode. For those people, the product is still highly recommended.

The story is different for other Windows 95 users. Qemm 97 does speed program loading and running, but the improvements were statistically interesting — we saved 25% to 35% on a 200-MHz Pentium-based system — but realistically droll because that translated into only a few seconds of real time. Unless you frequently boot to the command prompt, have less than 32M bytes of RAM and a lethargic processor (less than a 90-MHz Pentium), spend your money on more RAM rather than this product. □

DeVoney is a reviewer in Seattle. He can be reached at chrisd@cybercritic.com.

How long have you been waiting for a faster PC Workstation?

Outlook alters PIM market

CONTINUED FROM PAGE 69

copies of business PIM software were sold. That dropped to 529,294 last year. Year-to-date figures show only 273,956 have sold in the retail market.

In the corporate channel, sales of PIMs have skyrocketed, but the dollar value of the sales has plummeted. Last year, 686,086 units moved for more than $20 million. So far this year, 888,691 copies sold for slightly more than $10 million, according to PC Data.

Analysts and PIM makers said the numbers can be deceiving because the market is a moving target.

Tracking figures often lump contact managers along with traditional PIMs and software that synchronize organizers with handheld computers.

Additionally, some PIMs are morphing into group schedulers and moving beyond address books and to-do lists.

The PIM market still has plenty of life in it, and Outlook may just help it grow, said Rebecca Wettermann, an analyst at International Data Corp. in Framingham, Mass. "Outlook is going to take some business away, and it's going to educate a whole new realm of Windows users who wouldn't have considered using it before."

Wettermann said those users, after they are educated about PIMs, may seek other specialized products.

For example, with an estimated installed base of 20 million, Lotus Development Corp.'s Organizer ranks as one of the top PIMs in the market.

The Cambridge, Mass., company includes Organizer with its SmartSuite product.

Microsoft Outlook product manager Scott Gode said Outlook was designed to create a new category of software that incorporates E-mail, group scheduling and information management, so it gets compared with several different products. However, it wasn't intended "to wipe out the PIM market," he said.

Outlook's success at branding the PIM market with a Microsoft "M" will ultimately depend on how well it performs, said Rob Enderle, an analyst at Giga Information Group in San Jose, Calif. The current incarnation falls short in advanced features such as contact management, he said.

USER OUTLOOK

Some users concurred. In making their PIM choices, two users said Outlook just wasn't on the page.

"Outlook was more geared for our home office employees," said Lorraine Cronin, first vice president of branch technology at brokerage house Prudential Securities, Inc. in New York. "[Outlook] didn't have as good a way as setting up a database as the brokers would need. I thought Outlook was good for calendars and scheduling, period. But not for other data that needed to be gathered."

Cronin selected Cupertino, Calif.-based Symantec Corp.'s Act for 1,400 brokers after conducting focus groups with users.

Still, Enderle said, with 14 million Office 97 users, Microsoft has a powerful way to deliver Outlook to users and foster the perception by corporations that it has cornered the market on PIMs.

Although Outlook may not be the best of the breed in scheduling or as an E-mail client, it may be enough to justify using it and to keep IS shops from purchasing anything else.

"For most people, Outlook is enough," Enderle said.

That was the case at American Insurance Group in New York. Bob Cavallaro, director of advanced technology, said the 10,000 users with Outlook have been fairly pleased with the product. Cavallaro said the company was rewriting Lotus Notes applications for Outlook and recognized Outlook's weaknesses.

"We'd like to see it do a little more from a functionality standpoint," Cavallaro said.

He said he hoped to see more contact management features in future Outlook versions. □

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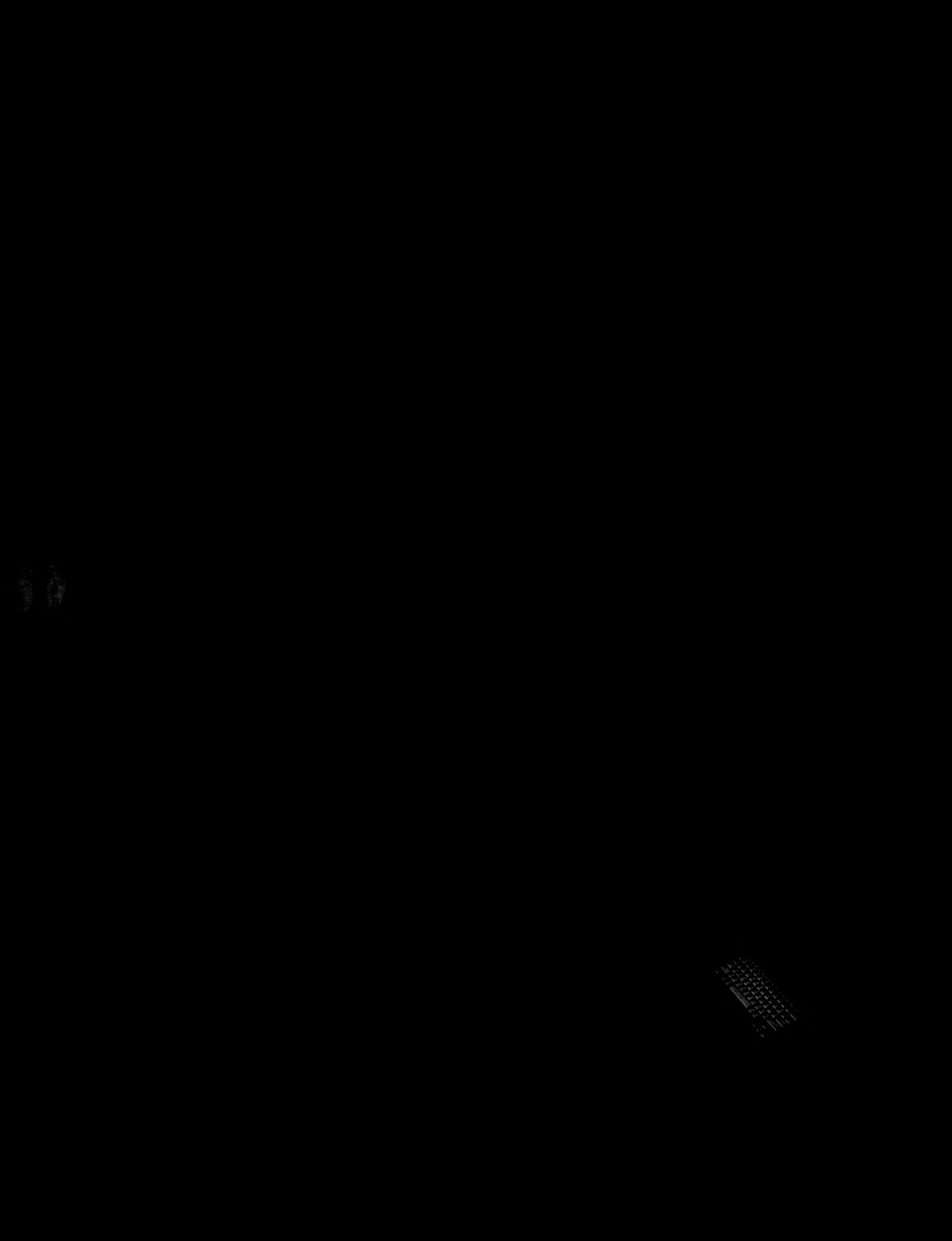

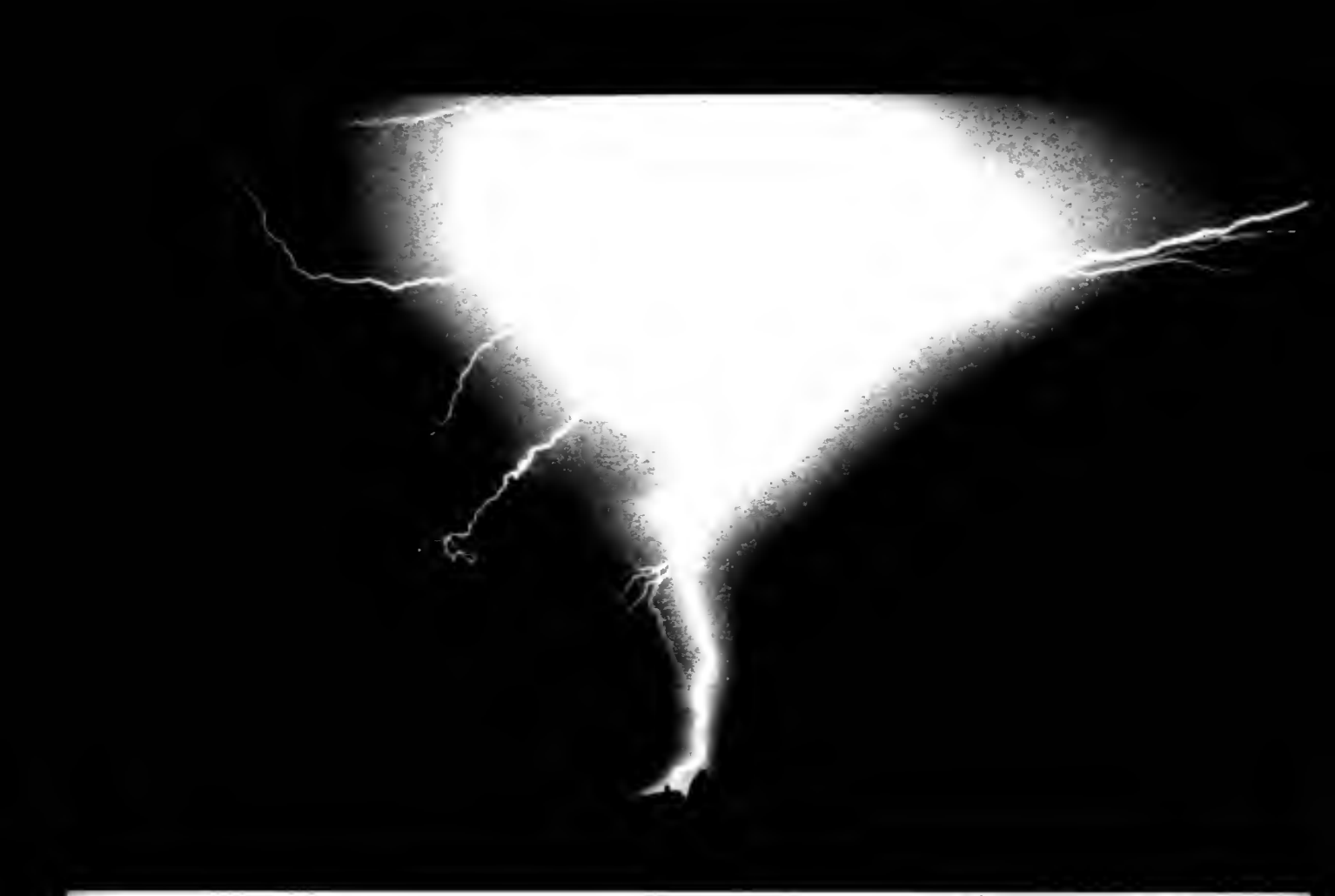

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Briefs

Users like new AS/400E headroom

By Tim Ouellette

IBM's AS/400 has always been known as a reliable performer. Now Big Blue wants the midrange system to be known for high performance.

With last month's announcement of the new AS/400E line, users can get their hands on eight- and 12-way processor models powered by the latest Apache 250-MHz PowerPC chip [CW, Aug. 25].

MIDRANGE SYSTEMS

The move gives users a chance to retain their beloved AS/400s for use in high-end applications, where they haven't been able to deliver in the past. It also gives non-AS/400 shops a reason to take another look at the system.

"The way I see it is that the AS/400 can now really extend upward to larger-size companies," said Dennis Lynch, MIS director at Orval Kent Food Co., an AS/400 shop in Wheeling, Ill. "Now the slow and expensive tag on the AS/400 is being removed."

Although Orval won't move right away to the high-end systems, Lynch said it is reassuring to see IBM make room at the top for his company's future computing demands.

Other users, such as Evelyn Crabtree, were champing at the bit for the new models.

"We had maxed out our Model 530, and since our Christmas season begins in September, we wanted to go into beta on the 12-way system right away," said Crabtree, manager of computer operations at Valley Record Distributors, Inc.

The Woodlands, Calif., company, which sells music recordings, has been running the Model 650 12-way system in full production since July to get ready for the Christmas rush. With nearly 50% growth each year, the company was worried the AS/400 couldn't handle the load this year unless Valley Record got the 12-way system in place immediately.

AS/400, page 78

Michael Grebliunas

Orval Kent's Dennis Lynch says the AS/400 is shedding its tag of being expensive, slow and proprietary

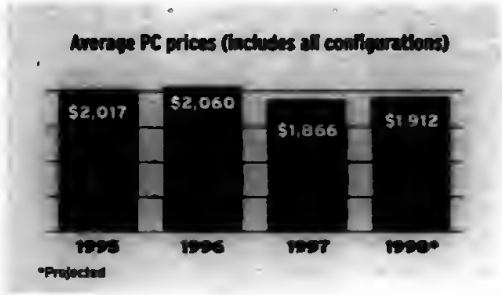
PC prices are down; feature improvements are up

By April Jacobs

USERS CAN GET more PC for their money than they could this time last year. Prices have fallen an average of $46 per desktop over the past year, and features have been improved, such as faster Pentium II processors, MMX and Universal Serial Bus.

Desktop prices have dropped markedly since 1995 — when a PC cost a user an average of $2,017 — to an average of $1,866 this year, according to International Data Corp. (IDC) in Framingham, Mass. But prices next year will increase slightly for the final time in this decade due to new and temporarily higher-priced components, according to IDC forecasts.

New chips such as the Pentium II and the LX chip set will drive up prices at the high end, which will drive up the market average. But prices will drop again as production ramps up, IDC predicted.



Source: International Data Corp., Framingham, Mass.

MORE RETURN

"People can get more for what they are spending," said Roger Kay, an analyst at IDC. "But often, they will set a dollar amount and try to get the most they can rather than spend less on a lower-grade machine."

Larry Garden, manager of technical operations at Brewers Retail, Inc. in Mississauga, Ontario, agreed.

"We know the prices are going to drop. But when we're buying, we'll ask what the latest features available are, and we'll buy the better systems for the same money rather than spend less on a lower-quality machine," Garden said.

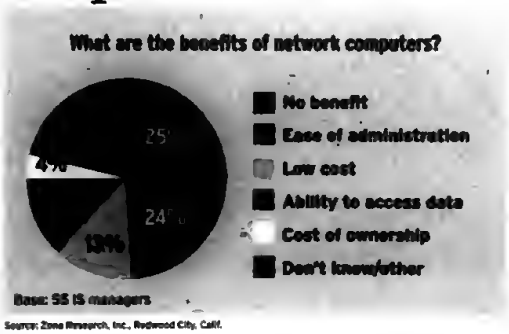
"So if the last PC you bought was $2,000, you'll spend the same amount this time and get a better monitor, multimedia, etc.," he said.

That buying trend has led hardware vendors to put more pressure on component suppliers in the past year. Memory prices, for example, have fallen as much as 40% in the past year. And Intel Corp. in Santa Clara, Calif., cut prices in its Pentium line by as much as 20%.

Dell Computer Corp. in

PC prices, page 79

Snapshot



Source: Zona Research, Inc., Redwood City, Calif.

Servers & PCs

Large Systems • Workstations • Portable Computing

Briefs

Off-loading storage

Oracle Corp. in Redwood City, Calif., and Network Appliance, Inc. in Santa Clara, Calif., this week will announce plans for tying Oracle's databases to file servers made by Network Appliance. That will let Oracle users off-load database storage from application servers to I/O-oriented NetApp boxes.

Network storage

Computer Network Technology Corp. in Minneapolis has announced three storage networking products: the UltraNet Storage Director, UltraNet Storage Gateway and UltraNet Storage Multiplexer. The Storage Director, a switching platform, will be available next month for $160,000. The Gateway, due in January, is an entry-level version of the director and will cost $35,000. And the Multiplexer, shipping in November, lets multiple servers share up to 15 storage devices. It costs $12,000.

Sequent warehouse

Sequent Computer Systems, Inc. in November plans to introduce a pair of packaged data warehousing applications built around its Numa-Q 2000 multiprocessors. Sequent, in Beaverton, Ore., is building database marketing and fraud-detection packages that will include its hardware, services, third-party tools, analysis software and an Oracle or Informix software, Inc. database.

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By Tim Ouellette

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Average PC prices (includes all configurations)

*Projected

Source: International Data Corp., Framingham, Mass.

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Dell Computer Corp. in

PC prices, page 79

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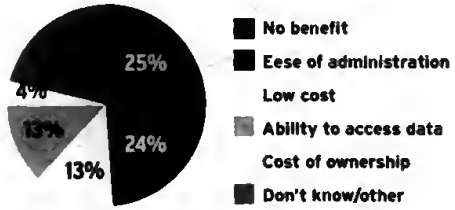
What are the benefits of network computers?



Base: 55 IS managers

Source: Zona Research Inc., Redwood City, Calif.

AS/400 courts high-performance users

CONTINUED FROM PAGE 77

Crabtree said.

Analysts agreed that the new high-end machines fill a glaring gap in the AS/400's offerings.

"Before, some shops could not use [the AS/400] to support their largest and often most important applications due to its performance limitations," according to John Logan, president of Aberdeen Group, Inc. in Boston, in a recent report.

For example, Bruce Bond at Gartner Group, Inc. in Stamford, Conn., recommended users stay away from the latest version of SAP AG's R/3 on the AS/400 until the new boxes could pick up some of the performance slack.

Now, IBM will even tune several high-end AS/400 models specifically for R/3 and similar suites from J. D. Edwards & Co. in Denver and SSA, Inc. in Chicago.

And the improved performance should bolster IBM's efforts to make the AS/400 an attractive alternative to other Unix and Windows NT offerings (see story below).

ON PAR

A recent report by Zona Research, Inc. in Redwood City, Calif., said the AS/400E compares well with multiprocessor servers that feature processors such as Intel Corp.'s Pentium, Sun Microsystems, Inc.'s UltraSPARC and Hewlett-Packard Co.'s PA-RISC.

"The AS/400E hits scalability heights that are over the horizon for Windows NT, even with the forthcoming Wolfpack clustering technology," the report said.

IBM plans to give the AS/400 its own updated clustering technology next year [CW, June 16]. And the new eight- and 12-way boxes are bolstered by a new version of the OS/400 operating system, more cache (from 4G to 20G bytes) and the 1T-byte of available internal disk capacity.

That will give some users the chance to not only crank up performance of important applications, but also consolidate the management of numerous AS/400s in one place.

For example, one early beta tester said the headroom the new machines provide will free up space in his company's data center.

"Right now, we have nine four-way machines. We don't want to have to manage nine machines. That is one thing that attracted us to the eight-way," said Jerry Burton, assistant vice president for data services at Costco Wholesale, Inc., a Seattle-based wholesale warehouse chain. □

The lure of power

Analysts in the past have given IBM low marks for promoting the AS/400.

That's because a solid 80% of AS/400 sales still come from customers running about 425,000 machines.

But IBM has grander designs.

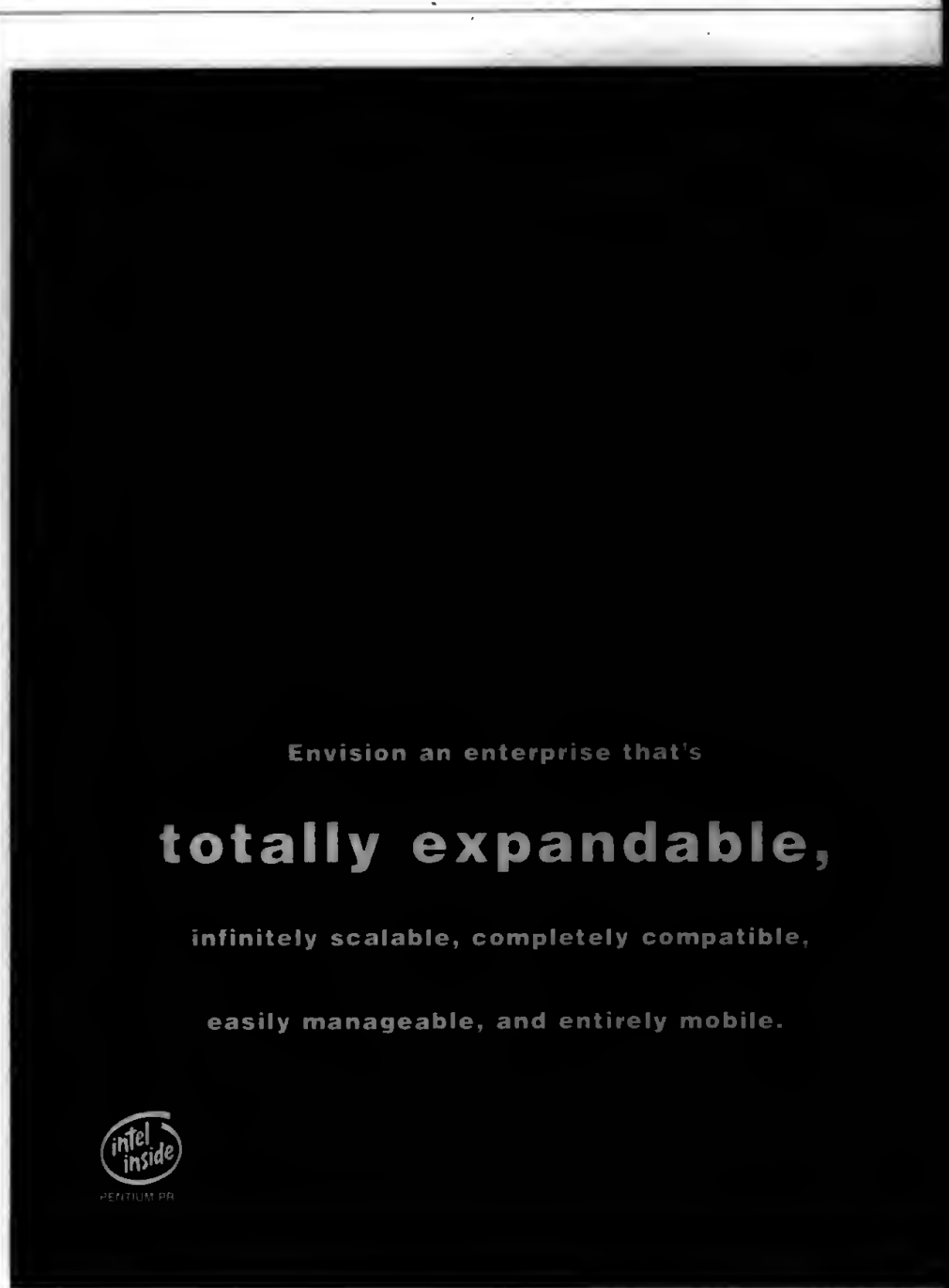
During the recent unveiling of the AS/400E server lineup, Bill Zeitler, general manager of the AS/400 division, said IBM will target users of "older products without support for new technology."

Specifically, IBM officials hope to attract users of systems such as Hewlett-Packard's HP 3000 and Digital Equipment Corp.'s VAX/VMS for migration to the new AS/400E boxes.

IBM has tried that tactic before with little success, said Ron Seybold, editor of "3000 Newswire," an HP 3000 newsletter in Austin, Texas.

As with the AS/400 with its integrated DB2 database, "people using the HP 3000 really need the Image database. They would have to do a lot of data migration to move to the AS/400," Seybold said.

— Tim Ouellette



NEW PRODUCTS

FRANKLIN ELECTRONIC PUBLISHERS, INC. has announced REX, a pocket-size PC card with an LCD screen that enables PC organizer data downloads and viewing.

According to the Burlington, N.J., company, the card plugs in to any Type II slot on notebooks or in to a specialized docking station that connects to PCs via a serial port. The card comes with a personal information manager (PIM) and synchronization software that can download from most PC PIM programs, including Organizer from Lotus Development Corp. and Schedule+ or Outlook from Microsoft Corp.

The price is $129.95 for the card and $179.95 for the card and docking station.

Franklin Electronic Publishers
(609) 386-2500
www.franklin.com

CUBIX CORP. has announced the PowerSMP Series 4000, five independent servers in one fault-tolerant enclosure.

According to the Carson City, Nev., company, the Series 4000 ships with a symmetrical multiprocessing 200-MHz Pentium Pro server subsystem and four 200-MHz Pentium uniprocessor subsystems in one chassis. The unit was designed to consolidate multiple server environments.

Pricing starts at $8,635.

Cubix
(702) 883-1000
www.cubix.com

WESTERN DIGITAL CORP. has announced the WD Caviar 6.4 GB, a 3.5-in. desktop PC hard drive with a capacity of 6.4G bytes.

According to the Irvine, Calif., company, the three-platter drive uses magneto-resistive head technology to achieve an aerial density of 2.16G-bytes per platter. The drive costs $429.

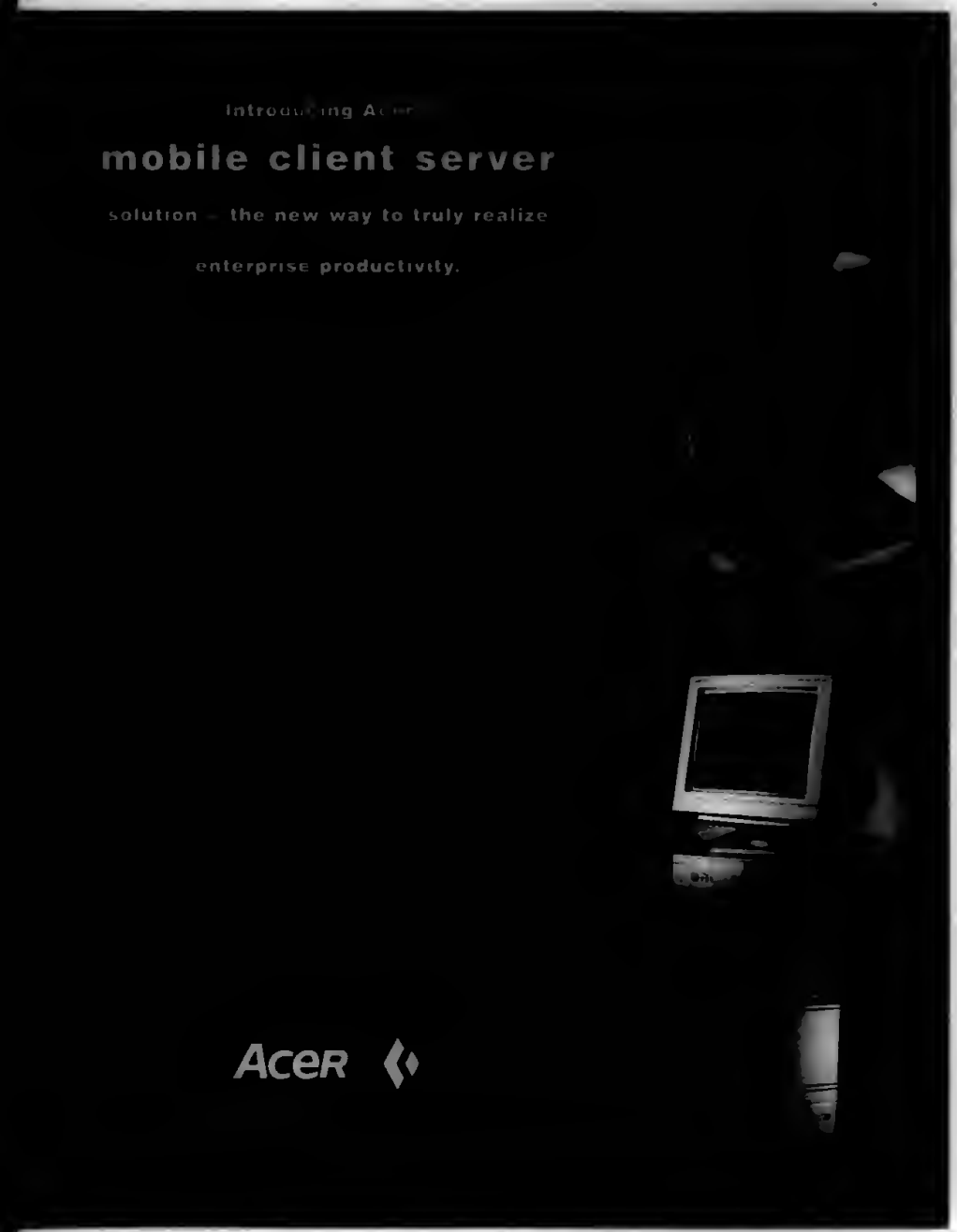
Western Digital
(714) 932-5000
www.wdc.com

AIWA AMERICA, INC. has announced the TD-AS3220, a TR-3 tape drive with an Advanced Technology Attachment Packet Interface (ATAPI).

According to the Irvine, Calif., company, the tape drive's ATAPI interface lets it back up data at speeds of up to 38M byte/min. The TD-AS3200 was designed to provide as much as 3.2G bytes of compressed storage capacity per TR-3 minicartridge.

The tape drive costs $275.

AIWA America
(714) 862-0200
www.aiwa.com



PC prices down

CONTINUED FROM PAGE 77

Round Rock, Texas, has lowered prices on its OptiPlex corporate desktops in the past year and given users twice the memory and faster processors in most cases.

For example, its OptiPlex GXI sells for $2,497 — 7% lower than in June — with 64M bytes of RAM, a 233-MHz Pentium processor with MMX and a 3G-byte hard drive. A comparable desktop last year sold for $2,698 and featured only 16M bytes of RAM, a 180-MHz processor and a 2G-byte hard drive.

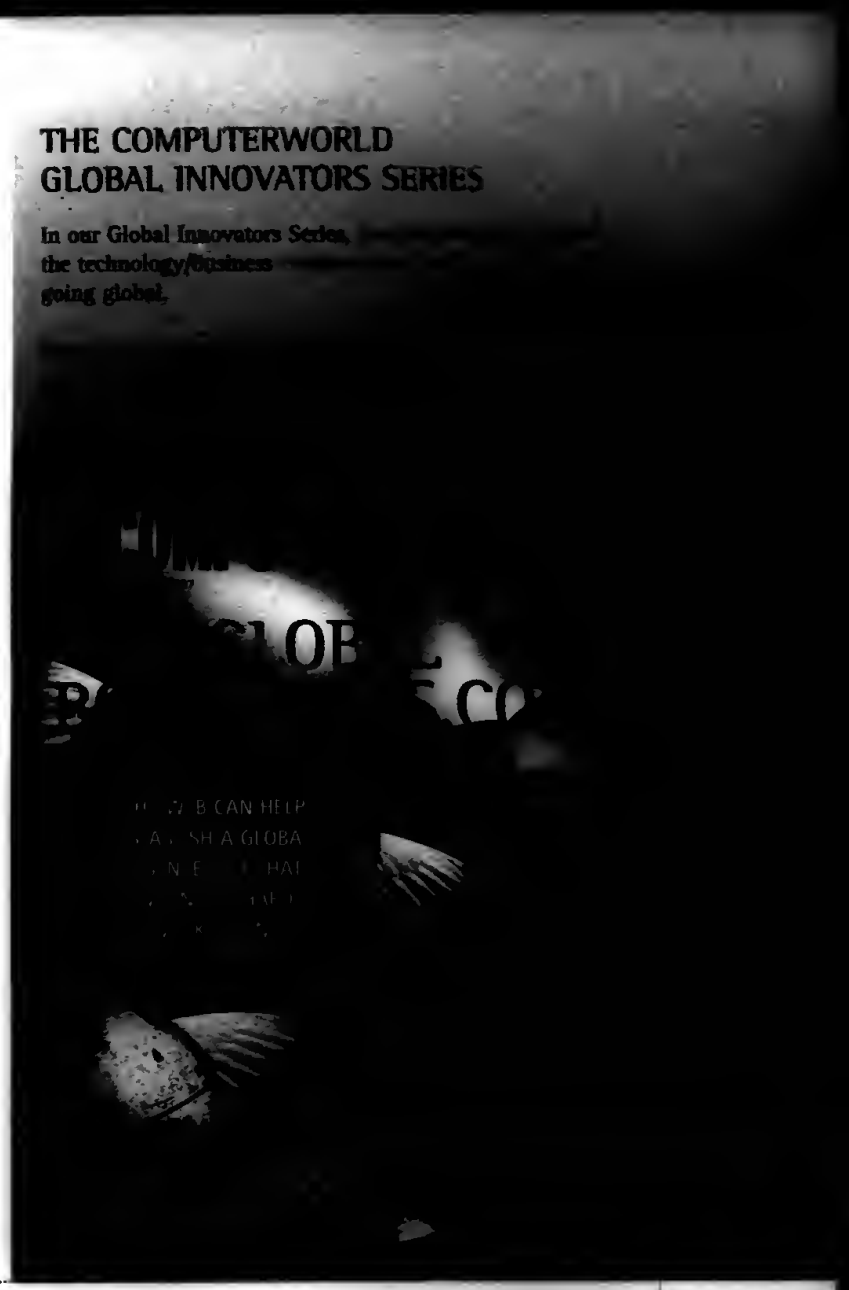
Compaq Computer Corp. in Houston also has lowered prices. Its Deskpro models started last year at $1,560 and now start at $1,070.

And several vendors offer PCs for less than $1,000.

MicroElectronics, Inc. in Columbus, Ohio, last week began selling a PC priced at $499. The company's PowerSpec Model 1660 features a Cyrix 166-MHz processor, a 1G-byte hard drive, floppy drive, CD-ROM drive and 33.6K bit/sec. fax modem. A monitor must be purchased separately.

But those types of systems are aimed mostly at consumers, Kay said. He said he expects to see more such systems aimed at corporate buyers within the next few months. □

Beware the hidden "gotcha's" when using the Web for global commerce



Coming in the October 6th issue of Global Innovators

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- Traitement Cooperatif & Integration de Systeme in France.
- X-Radio Corp. in the U.S.
- Itochu Corp. in Japan.

World View: South African Bank Solves an Object Puzzle

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40. Wholesale/Retail/Trade
50. Business Service (except DP)
60. Government - State/Federal/Local
68. Communications Systems/Public Utilities/Transportation
70. Mining/Construction/Petroleum/ Refining/Agriculture
80. Manufacturer of Computers, Computer-Related Systems or Peripherals.
85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
90. Computer/Peripheral Dealer/Dist./ Retailer
95. Other_____ (Please Specify)

2. TITLE/FUNCTION (Circle one)
IS/MIS/DP MANAGEMENT
19. Chief Information Officer/Vice President/Asst. VP IS/MIS/DP Management
21. Dir./Mgr. MIS Services, Information Center
22. Dir./Mgr. Network Sys., Data/Tele Comm., LAN Mgr./PC Mgr., Tech. Planning, Administrative Services
23. Dir./Mgr. Sys. Development, System Architecture
31 Programming Management, Software Developers
41 Engineering, Scientific, R&D, Tech. Management
60. Sys. Integrators/VARs/Consulting Management
CORPORATE MANAGEMENT
11. President, Owner/Partner, General Mgr.
12. Vice President, Asst. Vice President
13. Treasurer, Controller, Financial Officer
DEPARTMENTAL MANAGEMENT
51. Sales & Mktg. Management
70. Medical, Legal, Accounting Mgt.
OTHER PROFESSIONAL MANAGEMENT
80. Information Centers/Libraries, Educators, Journalists, Students
90. Other Titled Personnel

3. Do you use, evaluate, specify, recommend, purchase: (Circle all that apply.)
Operating Systems
(a) Solaris (e) Mac OS
(b) Netware (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) NeXTstep
App. Development Products ☐ Yes ☐ No
Networking Products ☐ Yes ☐ No
Internet Products ☐ Yes ☐ No

4. Which of the following products do you buy, specify, recommend or approve the purchase of? (Check all that apply.)
(a) ☐ Internet software
(b) ☐ Internet browsers
(c) ☐ Web authoring/development tools

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30. Medical/Law/Education
40. Wholesale/Retail/Trade
50. Business Service (except DP)
60. Government - State/Federal/Local
68. Communications Systems/Public Utilities/Transportation
70. Mining/Construction/Petroleum/ Refining/Agriculture
80. Manufacturer of Computers, Computer-Related Systems or Peripherals
85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
90. Computer/Peripheral Dealer/Dist./ Retailer
95. Other_____ (Please Specify)

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21. Dir./Mgr. MIS Services, Information Center
22. Dir./Mgr. Network Sys., Data/Tele. Comm., LAN Mgr./PC Mgr., Tech. Planning, Administrative Services
23. Dir./Mgr. Sys. Development, System Architecture
31 Programming Management, Software Developers
41. Engineering, Scientific, R&D, Tech. Management
60. Sys. Integrators/VARs/Consulting Management
CORPORATE MANAGEMENT
11. President, Owner/Partner, General Mgr.
12. Vice President, Asst. Vice President
13. Treasurer, Controller, Financial Officer
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Operating Systems
(a) Solaris (e) Mac OS
(b) Netware (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) NeXTstep
App. Development Products ☐ Yes ☐ No
Networking Products ☐ Yes ☐ No
Internet Products ☐ Yes ☐ No

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(c) ☐ Web authoring/development tools

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Mobile Computing

Special Section: Remote Access • Portable Computers • Mobile Strategies

Briefs

LAPTOP LOSSES

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- **Theft: 265,000 stolen**
- **Accidents: 345,000 incidents**
- **Power surge: 80,000 damaged**
- **Water/flood: 9,000 damaged or destroyed**
- **Lightning: 6,000 damaged or destroyed**

Source: Software Insurance Agency, Inc., Columbus, Ohio

Internet E-mail gets easier

▶ *Lines blur between intracompany, outside mail*

By Barb Cole-Gomolski

THE INTERNET is emerging as the most promising way to give remote users access to corporate electronic mail. But several hurdles stand in the way of information systems departments fully exploiting the 'net for that purpose.

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But the lines between traditional E-mail and Internet-mail — previously used mainly for contact with people outside the company — have blurred to make it easier for users to access mail remotely, using Internet accounts rather than dial-up lines to connect to mail servers.

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During the past year, leading messaging vendors, including Lotus Development Corp., Microsoft Corp. and Novell, Inc., have added support for Internet mail protocols that let users send and receive messages over the Internet using their standard E-mail client. That approach appeals to IS because it eliminates the need to support an Internet-only client — such as Qualcomm, Inc.'s Eudora — as well as a corporate mail client.

"It's one-stop shopping for E-mail," said Garnett Gleim, manager of end-user support programs at Saskatchewan Wheat Pool, a grain company in Regina, Saskatchewan. By next year, the company's 2,700 mail

Internet E-mail, page 84

How has the Internet affected use of remote software for E-mail?

- **Supplemented**
- **Replaced**
- **None**
- **Other/don't know**

Base: 150 IS professionals at mid-size and large organizations

Source: International Data Corp., Framingham, Mass.

Win CE spawns new handheld devices

By Kim Girard

A NEW VERSION of Microsoft Corp.'s operating system for handheld computers expected this fall should give users an improved graphical interface and easier access to the Internet and electronic-mail attachments. But some early testers and analysts said Version 2.0 of Windows CE falls short of its potential.

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New devices running CE 2.0, which weigh about 13 ounces and have between 10 and 15 hours of battery life, are expected to be faster and more powerful. Some will have larger color screens than handhelds made for the first version of CE.

"Microsoft needs to break the need to make everything look like Windows"

Although analysts said palmtops that use Windows CE 2.0 will have improved features, the systems will fall short of PalmPilot when it comes to information management. PalmPilot, from Skokie, Ill.-based U.S. Robotics Corp., is an electronic organizer that runs on a proprietary operating system.

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Win CE, page 84

HANDHELDS ON THE MARKET

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Hitachi HPW 10E2	2M and 4M bytes of RAM and supports 28.8K bit/sec. modems	12 ounces (including batteries)	$500
NEC MobilePro	2M and 4M bytes of RAM and wireless connectivity	8 ounces	$499 and $649
Philips Electronics Velo 1	8M bytes of RAM and built-in 19.2K bit/sec. modem	13.2 ounces	$599

*Reselling Casio's handheld

REVIEW▶ *Microsoft's VPN software*

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ALTHOUGH information technology departments seldom get something for nothing, Microsoft Corp.'s virtual private network (VPN) remote access software is the next best thing. With this software, available as a free add-on to Windows NT Server, individual corporate users gain inexpensive dial-up access to the corporate LAN, and remote offices reduce the cost of their dedicated access lines to the home office.

The key is the ability to securely route LAN traffic across the public Internet as if it were part of the LAN — a VPN. That substitutes Internet connections for the cost of modem pools for dial-in users and jettisons the dedicated lines between the remote and home offices.

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Source: Safeware Insurance Agency, Inc., Columbus, Ohio

Cordless connection

IBM in Somers, N.Y., has announced a wireless device that lets PC users surf the World Wide Web, connect to online services and send and receive electronic mail, faxes and voice mail up to 200 feet from a telephone jack. The cordless computer connection is modeled after the cordless phone. It uses radio frequency technology with a modem. It includes a unit that plugs in to a phone jack and a compact remote unit that plugs in to a notebook or desktop computer modem. The cordless computer connection costs $299 and is available this month.

European wireless

Three large European vendors have thrown their weight behind a wideband, wireless multimedia technology specification under consideration by the European Union. Ericsson Group, Alcatel Alsthom SA, Nokia Telecommunications Corp. and Siemens AG are backing the Universal Mobile Telecommunications System, which provides data transfer rates of between 144K bit/sec. and 2M bit/sec. If it is accepted as a standard, commercial services should be available by 2000.

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Internet E-mail, page 84

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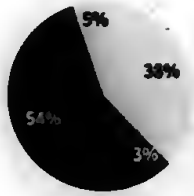

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Virtual, page 84

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Internet E-mail

CONTINUED FROM PAGE 81

users will access their in-boxes with Lotus Notes clients because that software now supports the Post Office Protocol Internet mail standard.

Mark Levitt, research manager at International Data Corp. (IDC) in Framingham, Mass., said providing Internet access to corporate E-mail servers is the most promising remote access alternative. But he said many E-mail servers in place today don't yet support World Wide Web access. "It will take time before these older servers are upgraded," he said. In the meantime, dedicated remote E-mail clients will continue to be the primary way that users access corporate E-mail.

REMOTE USER COMMUNICATION

INTERNET SUPPLEMENT

A recent IDC survey of 150 IS professionals showed that Internet mail had replaced remote E-mail clients in only 3% of companies. For many — 38% — Internet mail merely supplemented remote E-mail clients.

In many cases, those supplemental Internet E-mail accounts are hosted by Internet service providers, online services and free Web E-mail sites, Levitt said. "The challenge with this alternative is to either forward incoming messages from the primary corporate mailbox to the secondary mailbox or to prompt the people who send E-mail to the user to send it to the secondary mailbox," he said.

Michael McGhee, director of administrative computing at the University of Nevada, Las Vegas (UNLV), said the replication capability in Notes makes it the preferred mail client for remote access on UNLV's campus because it lets users more quickly retrieve new mail, which reduces telephone charges. Because newer, Internet-only mail clients don't offer such services, McGhee added Lotus Weblicator to the desktops of non-Notes users. That utility adds Notes-like replication to browsers.

McGhee said most users want one account for Internet mail and a second, secure link to their company's network for internal E-mail. But most IS organizations that are adding Internet mail are trying to give users one interface to corporate and Internet E-mail accounts.

But some companies are reluctant to open up corporate E-mail to the Web for security reasons, said Greg Arnette, a senior consultant at Synaxis Corp., a consultancy in Needham, Mass. He said opening up corporate mail servers to Web access usually creates a "pinhole in the firewall" through which mail is passed.

LIMITATIONS

The limitations of Internet messaging have kept some sites from relying on it more heavily for E-mail access. "There are still things you can't do easily over the Web, like attaching files or marking 12 items at a time for deletion," said Leonard Hirsch, an assistant director at the information technology office of The Smithsonian Institution in Washington, which uses Novell's GroupWise.

The Smithsonian has deployed GroupWise Web Access, client software that runs in a Web browser and provides access to the GroupWise mailbox. Although there are some features that aren't available in the Web Access client, it has been well-received by end users, Hirsch said. □

Win CE spawns PDAs

CONTINUED FROM PAGE 81

Microsoft hasn't yet announced Windows CE 2.0, but observers said it is expected by the end of the month.

Analysts said the new machines will lack first-generation kinks. For example, users will be able to read attachments to Microsoft Word documents received as E-mail. With new print drivers in Windows CE 2.0, users will be able to print documents. The systems also will support Ethernet connections and improved Internet access.

Bob Borchers, research manager at Nike, Inc. in Beaverton, Ore., is testing Hewlett-Packard Co.'s HP200LX with Windows CE 2.0, which features versions of Microsoft's Word and Excel that users can operate with a combination of keyboard and pen controls. Borchers said the biggest problem of handhelds isn't the hardware, but integrating Windows CE with his company's Banyan Systems, Inc.-based network and using it for E-mail.

Hoechst Marion Roussel, Inc., a Kansas City-based pharmaceutical company, is testing Windows CE 2.0 on Velo 1, a Philips Mobile Computing Group handheld.

In January, the company plans to roll out 1,700 handhelds to sales representatives who will use them to report on sales calls and to capture doctors' signatures at medical offices, hospitals and clinics. Now, the Hoechst sales staff downloads signatures each night on an IBM ThinkPad and electronically transfers the information to the company's Oracle Corp. database.

Kevin Greenlee, an applications development manager at Hoechst, said the sales force will be able to use new CE 2.0 handhelds for PowerPoint sales presentations by connecting them to a projector or monitor. The sales force also uses Velo for retrieving E-mail through connections to a Microsoft Exchange 5.0 server.

CROWDED MARKET

Although there is no shortage of vendors that would like to ride Microsoft's coattails into the field, the handheld market already has established players.

David Vance, a patent agent at DuPont Merck, Inc. in Wilmington, Del., said he uses a Psion U.K. PLC 3A handheld that runs a proprietary operating system to track his appointments and business contacts.

For others in the department, the handhelds stay in the drawer, he said. "I just think these people would rather write on their notebook than on their handheld."

Handheld prices are between $500 and $700 but are expected to drop in the coming months, said Diana Hwang, an analyst at International Data Corp. (IDC) in Framingham, Mass. Gartenberg said at least 4M to 8M bytes of memory are needed to use a handheld effectively. □

Virtual nets ease access

CONTINUED FROM PAGE 81

umentation, although improved over earlier material, is obtuse at times. Establishing the VPN connection is clumsy, and the virtual network easily stumbles over incorrect TCP/IP settings.

The VPN starts by establishing a tunneling server, a Windows NT 4.0 server that runs Microsoft's Routing and Remote Access Server (RRAS) software and is connected to the corporate network and an external Internet provider.

PROTOCOLS GALORE

RRAS, formerly known as Steelhead, makes the Internet connection and routes packets between the networks. It uses Point-to-Point Tunneling Protocol (PPTP) to encrypt the packets — using NT's 40-bit or 128-bit algorithms — and to encapsulate the encrypted packet within a TCP/IP packet for transmission to the host. PPTP also can transport AppleTalk, IPX/SPX or NetBEUI packets.

Microsoft provides client PPTP software for NT 4.0 clients and Windows 95. Windows 3.1 and Macintosh systems can use PPTP with the aid of client software from Network Telesystems, Inc. in Sunnyvale, Calif.

We first tested the VPN by connecting up to four clients to a corporate network. We established a 150-MHz Pentium Compaq Computer Corp. ProSigna as our tunneling server using a local connection to Internet service provider PSINet, Inc. in Herndon, Va. We also installed and configured various NT Workstation 4.0 and Windows 95 computers for PPTP. The server took about 30 minutes to configure, and the clients took about 15 minutes each.

Our clients then dialed up an Internet service provider. After making the "local" Internet connection, we initiated a PPTP "call" to the tunnel server using the Dial-Up Networking feature. After the standard NT log-on, we had normal network access.

We also tested a remote-to-main office connection, breaking the network into two separate networks, connected to an NT server and a different Internet service provider. The clients on each network could access the others through the Internet with the servers acting as tunneling servers. After establishing the PPTP tunnel between the networks, we saw no difference between using a dedicated line or the Internet.

PPTP's modest overhead amounts to an 8% to 12% time penalty. On low-speed dial-up lines, the effect is noticeable but not distracting. For remote offices, the effects are easily mitigated by substituting a faster but local, dedicated connection to a quality Internet provider in place of the more expensive leased line to the home office.

We saw some fragility in the setup. Our initial tunneled clients couldn't access network machines by name, because the tunnel server's TCP/IP protocol had an incorrect IP address for the network's NT directory server. Normally, such settings are handled by the Dynamic Host Configuration Protocol on the NT server, which led to some debugging headaches.

LOTS OF CONNECTIONS

We found the client's triple log-on — Internet connection, PPTP connection and then the NT network connection — tedious.

Unless your network has a second gateway to the Internet, the PPTP client can't do anything else on the Internet unless it breaks the PPTP connection.

We did believe that the encryption over the Internet and the security, which uses NT facilities to authenticate users and which can deny non-PPTP packets, was adequate. But placing the tunnel server behind a firewall would be prudent. □

DeVoney (chrisd@cybercritic.com) is president of DeVoney and Associates, Inc., a technology research firm in Seattle.

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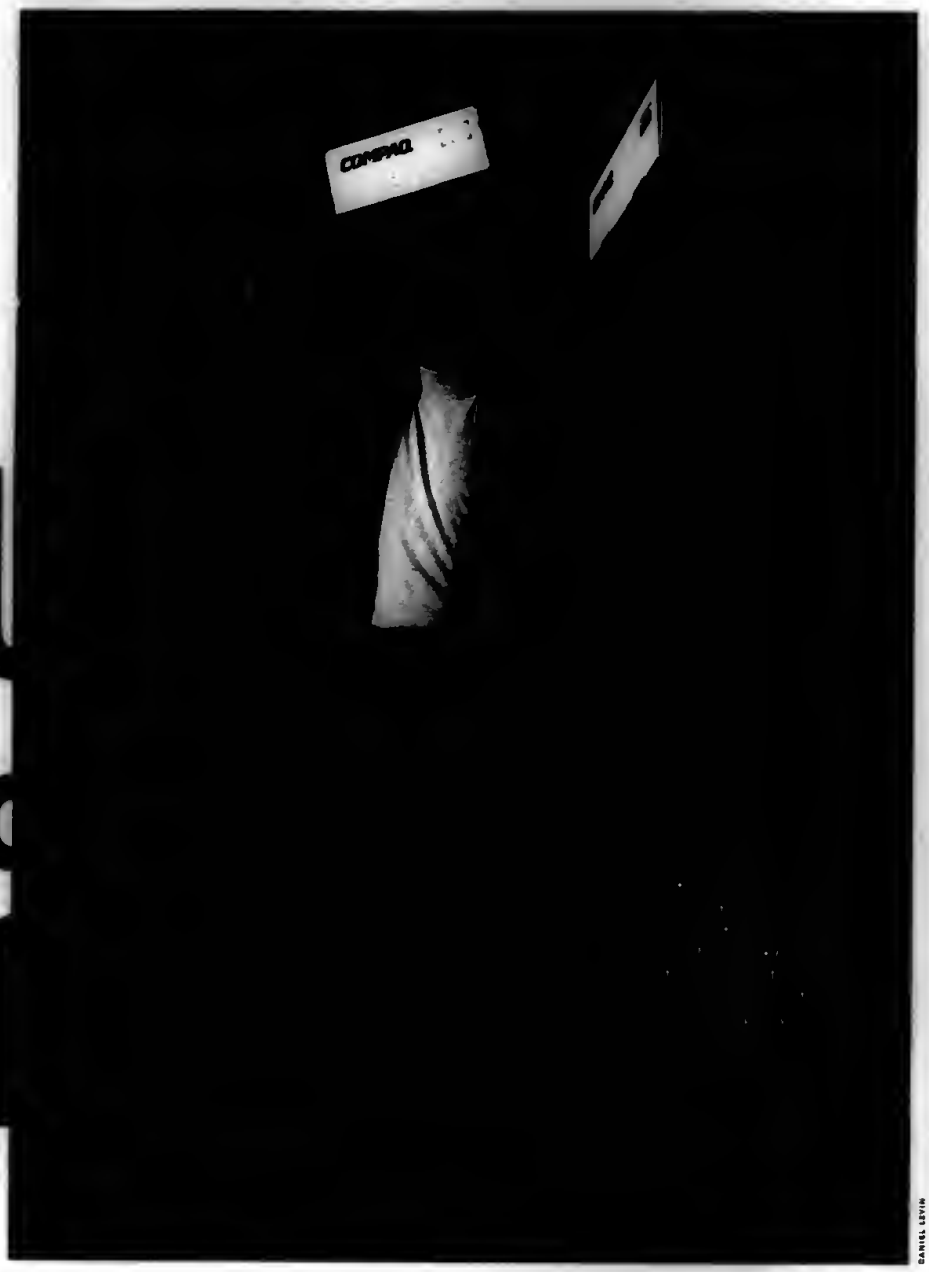
Managing

CW SURVEY:

Most IS budgets will rise in '98, and networks are a top priority at nearly 7 in 10 companies

Pay U to Lin



DANIEL LEVIN

BY ROBERT L. SCHEIER

IN FORMATION SYSTEMS budgets are going up next year, and many companies are putting networks at the top of their spending plans.

Nearly seven out of 10 IS managers who responded to a *Computerworld* survey said they expect to spend more next year on building, maintaining and managing the electronic links that are increasingly vital to their $100 million-plus companies. Networks were mentioned more often than hardware purchases (56%), training (54%) or software (46%) as areas where spending will be increased.

"It's really becoming an electronic enterprise," says Andy Balazs, vice president of information systems and services at Medical Mutual of Ohio. The Cleveland-based health insurer is preparing new client/server systems to help process claims and allow salespeople to prepare price quotes. It's also deploying Lotus Notes for its sales force.

The new applications "are really going to drive the network pretty hard," Balazs says. As a result, he's moving from gateways to switched Token Ring, replacing his Novell, Inc. NetWare servers with newer, more reliable hardware and central-

izing the management of TCP/IP traffic on the mainframe to cut costs and administrative effort.

But as businesses impose heavier loads on their networks, it becomes more critical that those networks stay up and perform well.

"Anytime a network goes down, that's a big loss" for Harsco Corp., says Sohail Shafi, director of corporate information technology at the $1.3 billion manufacturing and services company in Camp Hill, Pa. "Our business managers are demanding that the uptime on these systems be as close to 99.9% as possible."

Shafi says he expects his networks budget to rise at least 30% to 40% as Harsco shifts its wide-area network from private or leased lines to frame relay, which Shafi expects to be less expensive and more reliable.

The network spending is part of a larger trend in which companies, having come to depend on client/server applications to speed information to users, are more willing to upgrade the infrastructures that drive those applications.

During the past three years, for example, Harsco has spent approximately $20 million for everything from PCs to routers to enterprise software. "The business now feels it's time to deliver the results of what we have spent," Shafi says.

He hopes to use a soon-to-be-completed intranet to slash the costs of delivering human resources and benefits information to Harsco's nearly 200 locations and to use its new electronic-commerce infrastructure to sell more products online.

Dwight Muller, director of MIS at the Fallon and St. Vincent Health Care Systems in West Boylston, Mass., says he expects his IS spending to rise 25% next year, with almost all the extra money going toward off-the-shelf administrative and clinical systems to replace older, homegrown applications.

"It really is much too difficult to continue to modify and enhance and grow the [older] Cobol-based applications" because they weren't designed to share information, Muller says. That's a real business problem given the different health-care organizations for which Muller provides information services.

Another way to get more value from the corporate infrastructure is through training, on which 54% of the respondents plan to increase spending next year.

One of them is Kenneth Young, chief information officer at San Francisco architectural firm Hellmuth Obata + Kassabaum. He plans more training to make the firm's architects more productive at computer-aided design and in the database, electronic-mail and Internet skills they need to send customers more in-depth information about new buildings.

Detailed data about the design and location of office cubicles can make it easier and less expensive for customers to reconfigure their office space. Young's competitors provide such data, he says, and "our clients are demanding it as well."

SKILLS SHORTAGE

Another major factor driving IS spending is a shortage of skilled staff, which is driving up salaries and hiring bonuses. *Computerworld*'s 11th annual salary survey, released earlier this month, showed that salaries rose an average of 10% or more for 11 of 26 IS positions.

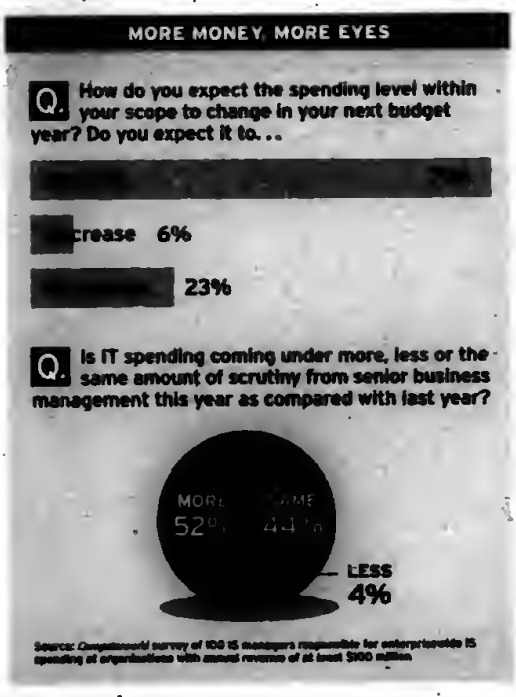
To keep its pay scales competitive, Harsco recently boosted base salaries between 5% and 15%, depending on geographic location and job category, "and I believe we will have to do that again in the next year," Shafi says. And for the first time, Harsco has begun offering $2,000 to $5,000 hiring bonuses to persuade attractive candidates to sign on the dotted line.

Although they're spending more in some parts of their budgets, IS managers are looking for other areas where they can cut spending or get more for their money. At Medical Mutual, for example, Balazs expects his overall budget to stay flat at about $36 million. To free up cash for the network upgrades, he figures he needs to cut 10% from his daily operational costs. His prime target: the company's inefficient processes for buying and managing its 3,500 PCs.

As IT emerges as a critical part of the business, more than half of those surveyed said senior business managers are looking closer at IT spending. A Gartner Group, Inc. report on IS spending trends, issued in July, pointed to "the rise in accountability within the enterprise for upgrades and replacements of the workplace infrastructure."

"The key is delivering something people can actually put their hands on and say, 'This benefit was realized as a result of that particular technology.' " Shafi says. To accomplish that, Shafi holds "best practices"

Pay up, page 93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23%
Q. Is IT spending coming under more, less or the same amount of scrutiny from senior business management this year as compared with last year?
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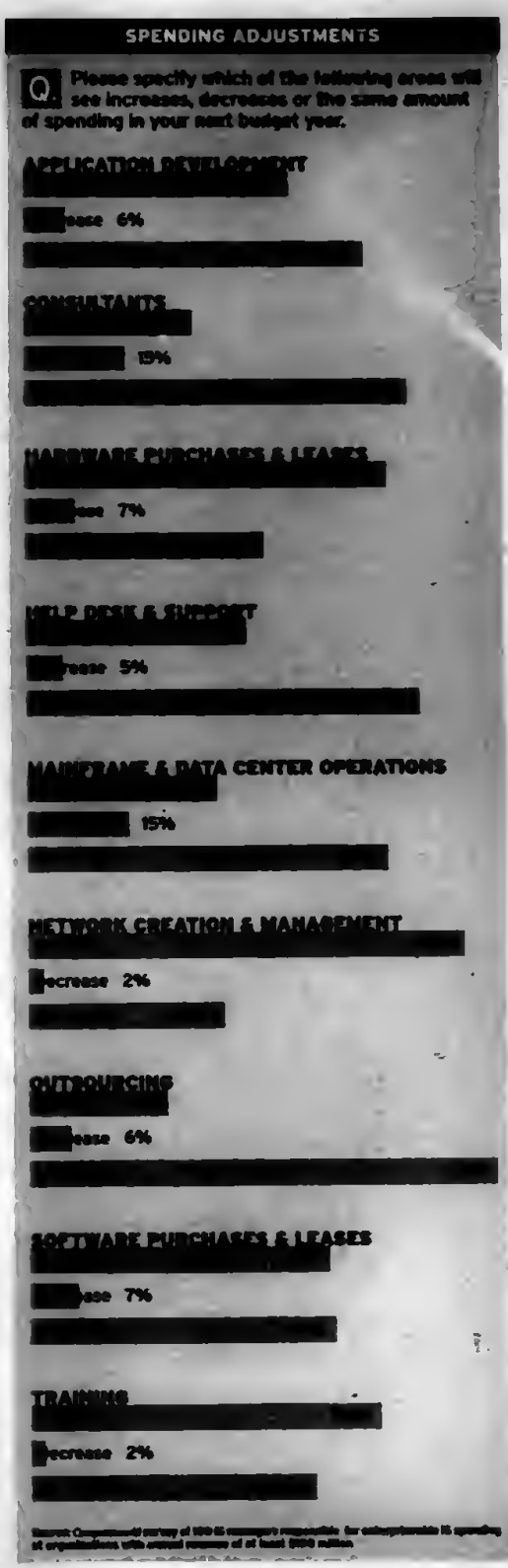

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Pay Up to Link Up

CONTINUED FROM PAGE 89

meetings and an annual conference with controllers from throughout the company to describe the IT organization's strategic road map.

"We go to great lengths to preach the value of technology in improving internal processes," explaining the costs and benefits of each IT initiative, he says. The controllers, in turn, pepper him with questions whose topics range from new technology standards to how corporatewide IT projects will affect their own systems.

Demonstrating the benefit should be fairly easy for newer applications with clear dollar benefits, Shafi says, such as an intranet designed to cut the costs of distributing corporate information and an electronic-commerce system to sell Harsco products over the Internet. Demonstrating such payback is harder from new accounting or manufacturing software because those systems produce less tangible benefits, he says.

When business managers are computer-savvy, they're more easily sold on IT's benefits, Young says, but they're also tempted to build pet projects using nonstandard hardware or software. For that reason, he hopes to centralize more IT functions so he can enforce a common look and feel to company systems that will allow employees and customers to work together more easily.

"The business now feels it's time to deliver the results of what we have spent," says Sohail Shafi, director of corporate IT at Harsco

Even corporate "bean counters" notorious for shooting down IT projects are falling blindly in love with new technology. At Medical Mutual, the vice president of finance "wanted to buy something that integrates voice and data and fax and cellular" traffic, allowing employees to access both voice and data messages over the phone, Balazs says.

Because the vice president is usually "the guy bouncing every capital expenditure . . . it's kind of strange" to hear him pitching technology for technology's sake, he says. He cooled the vice president's ardor by arguing that all-in-one telecommunications technology isn't ready yet and that there are less expensive ways to solve the same problems.

The vice president's enthusiasm "only lasts until I get him the bids to do it," Balazs jokes. "Then he's back to being the controller." □

Scheier is Computerworld's senior editor, management.

YEAR 2000

Don't worry! We'll make it

BY ROBERT L. SCHEIER

To hear some analysts tell it, every IS manager under the sun should be ramping up his year 2000 repair effort now, if not yesterday.

But a *Computerworld* survey on budget trends for next year shows IS managers are split about whether they should take a bigger bite out of next year's budgets to take care of the year 2000 bug. Forty-eight percent of those surveyed said they expect year 2000 spending to rise next year, 46% expect it to stay flat and 6% predicted a drop.

The IS managers surveyed were less concerned about the issue than many industry analysts, who warn that time is running out for companies to assess and fix the bug, which could cause computer errors or crashes as systems read a two-digit year field of "00" as 1900 rather than 2000.

For example, 21% of those surveyed said their organizations don't have a year 2000 problem, and another 14% said they haven't begun to fix theirs.

And although one in four said they've already had to postpone or cancel projects to free funds for year 2000 work, the IS managers surveyed were generally confident about their progress.

"We're basically done," says Kenneth Young, CIO at Hellmuth Obata + Kassabaum. "It was not a big issue for us. Our software is pretty much off-the-shelf stuff which has been handled by the software manufacturer."

"We have a plan in place, and my promise is by the end of [this year] we will have addressed the year 2000, at least from the business application side," says Chris Rapcsik, associate director of corporate systems at Transammonia, Inc., a commodities trading firm in New York. That work won't address compliance among PCs, he says, and the company hasn't decided who will handle those problems.

One reason some managers are confident is that their applications or hardware are relatively new, meaning they are more likely to be year 2000-compliant than older, mainframe-based Cobol systems.

Like 42% of those surveyed, Rapcsik asked for additional money to address the year 2000 issue. He got the money he asked for ($15,000), as did 60% of those polled who asked specifically for year 2000 funds.

Rapcsik's year 2000 budget request got a good hearing, he says, because "we have upper-management involvement, and we're also very much involved with our user base. We try to keep surprises to a minimum, and we try to be conservative in our budget approach." He's confident enough about his year 2000 work to say, "I have a budget to spend . . . but I don't think I'll need to spend it."

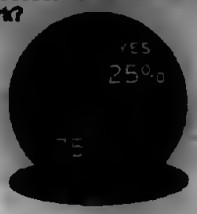
"We went to the board [of directors] and got the money" to do year 2000 repairs, says Andy Balazs, vice president of information systems and services at Medical Mutual of Ohio. "We wanted to make sure people knew it was important. We needed buy-in across the board, [saying] 'Here's what we need to do to make sure our business isn't at risk.' "

About a quarter of the way through his year 2000 work, Balazs counts himself among the 65% of IS managers who are confident in their estimate of year 2000 costs. "We've had very few surprises," he says. "We spent a lot of time up front in analysis."

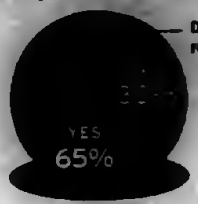
Although the spending figures came as no surprise to him, Gartner Group analyst Matt Hotle called it "stunning" that 21% of the respondents don't believe they have a year 2000 problem. "They have a problem," he says. "They just haven't figured it out."

GAUGING YEAR 2000 SPENDING

Q. Have you had to postpone or cancel projects this year because of the resources needed for year 2000 work?



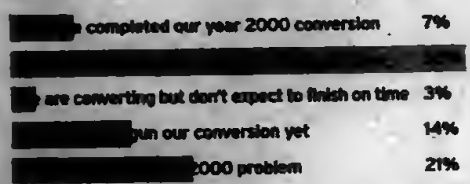
Q. Do you believe you have an accurate estimate of what your year 2000 conversion will cost?



BASE: 77 RESPONDENTS

Q. Will spending for the year 2000 increase, decrease or remain the same in your next budget year?

Q. Which of the following statements is most true about your company's year 2000 conversion?


completed our year 2000 conversion 7%
are converting but don't expect to finish on time 3%
un our conversion yet 14%
2000 problem 21%
on't know 2%

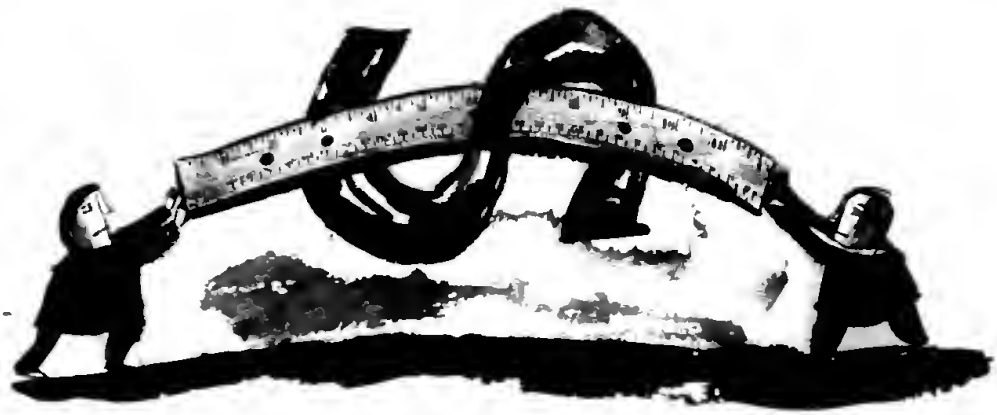
BASE: 100 RESPONDENTS

Source: Computerworld survey of 100 IS managers responsible for enterprisewide IS spending at organizations with annual revenue of at least $100 million

BENDING THE RULES

As technical skills become scarcer, IS managers get creative in recruiting. And the folks at human resources can sometimes help

BY GARY H. ANTHES



SIGNING BONUSES, project completion bonuses, double-digit pay increases, relaxed dress codes, free baseball tickets and more — information systems managers are pulling out all the stops to recruit and retain people with scarce skills.

Indeed, the year 2000 challenge and demand for skills in popular technologies are prompting companies to create special classes of employees who have compensation and perks not enjoyed by workers in nontechnical areas.

But that can run afoul of human resources departments that try to enforce uniform policies across the corporation.

"Progressive companies are aligning their HR policies with the demands of the market in a way that allows them to treat IS people differently from other people in the company," says David Foote, a managing partner at Cromwell Partners LLC in Stamford, Conn. "I'm seeing more and more of that, and it is controversial."

Atlanta-based forest products company Georgia-Pacific Corp. offers signing bonuses to new hires with skills such as SAP, Unix and Visual Basic. The company's human resource people tend to be "very lenient" in approving special benefits for people with those skills, says Thomas Fitch, manager of technical staffing in the company's human resources department.

For example, Fitch says, "the company has a full-dress policy, with casual dress on Friday, but many of the [IS] groups have gotten special dispensation to dress casually." He says that hasn't caused hard feelings among non-IS employees.

But other companies haven't been so lucky. A technical recruiter in the human resources group at a large publishing firm, who asked not to be named, says, "We can't do so much that we get all the vice presidents mad at IS. Hard feelings do exist because we pay them higher salaries."

SPECIAL TREATMENT?

"The biggest hurdle that IS faces is, 'Sure, your IS people are special, but so are our engineers, and so are our this, that and the other.'" says Jim Jones, managing director of the Information Management Forum, an Atlanta-based professional association of information technology executives. "The difference is, those other folks aren't on the demand curve that IS people are on."

Jones says that sometimes members of certain IS projects — such as year 2000 work — enjoy special perks. "So right within IS, you have the issue flaring up: Can you really treat a class of people differently and get away with it?" he says.

Says Foote, "Most of the CIOs I talk to who say they have no trouble with HR say, 'I just ignore them.' These are CIOs who have a mandate from the CEO."

But working with human resourc' people is better than ignoring them, Foote adds. "The tug-of-war between the IS and HR departments is being driven as much by IS's failure to educate HR on staffing needs as it is by HR's insistence on maintaining control," he says.

IS and human resource managers have developed several techniques for bending the normal hiring rules, but doing so in a way that's defensible. Barnett Banks, Inc. in Jacksonville, Fla., uses higher pay scales, sign-on bonuses and project bonuses mostly for its technical staff. A "compensation consultant" in human resources, trained in IS skills, helps justify the special consideration for IS people.

The consultant "looks at the marketplace and makes a recommendation as to how flexible we can be, what kinds of exceptions we can make for particular skills," says Charlene Alexia, an IS staffing specialist in the human resources department at the $44 billion bank.

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Olga Desio, Hewitt's human resources director, says the technical recruiters play a key role in heading off potential IS/HR conflicts. "A recruiter may come to me long before the IS manager does and say, 'I'm not finding what I need. What's your feeling on pushing these salaries?' They are very seasoned, so their sense of the market is something we really pay attention to," Desio says.

The University of Kansas School of Medicine in Wichita is "realigning" its technology salaries to make them more competitive, but state law constrains the school from matching private-sector salaries.

Patty Crowell, manager of educational technology in the school's IS group, says she competes with the private sector on nonfinancial benefits such as flexible working hours, access to training courses and conferences.

When asked if requests for special treatment of people with scarce skills ever conflict with human resources policies, human resources director Keri Crask says, "No. In my opinion, that's what HR is here for." □

Anthes is Computerworld's senior editor, special reports.

▶ RE[illegible]ENT

Part III
in a special series
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BY GARY H. ANTHES

ROBERT NEUBECKER

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RETENTION RECRUITMENT RAIDING

Part III in a special series

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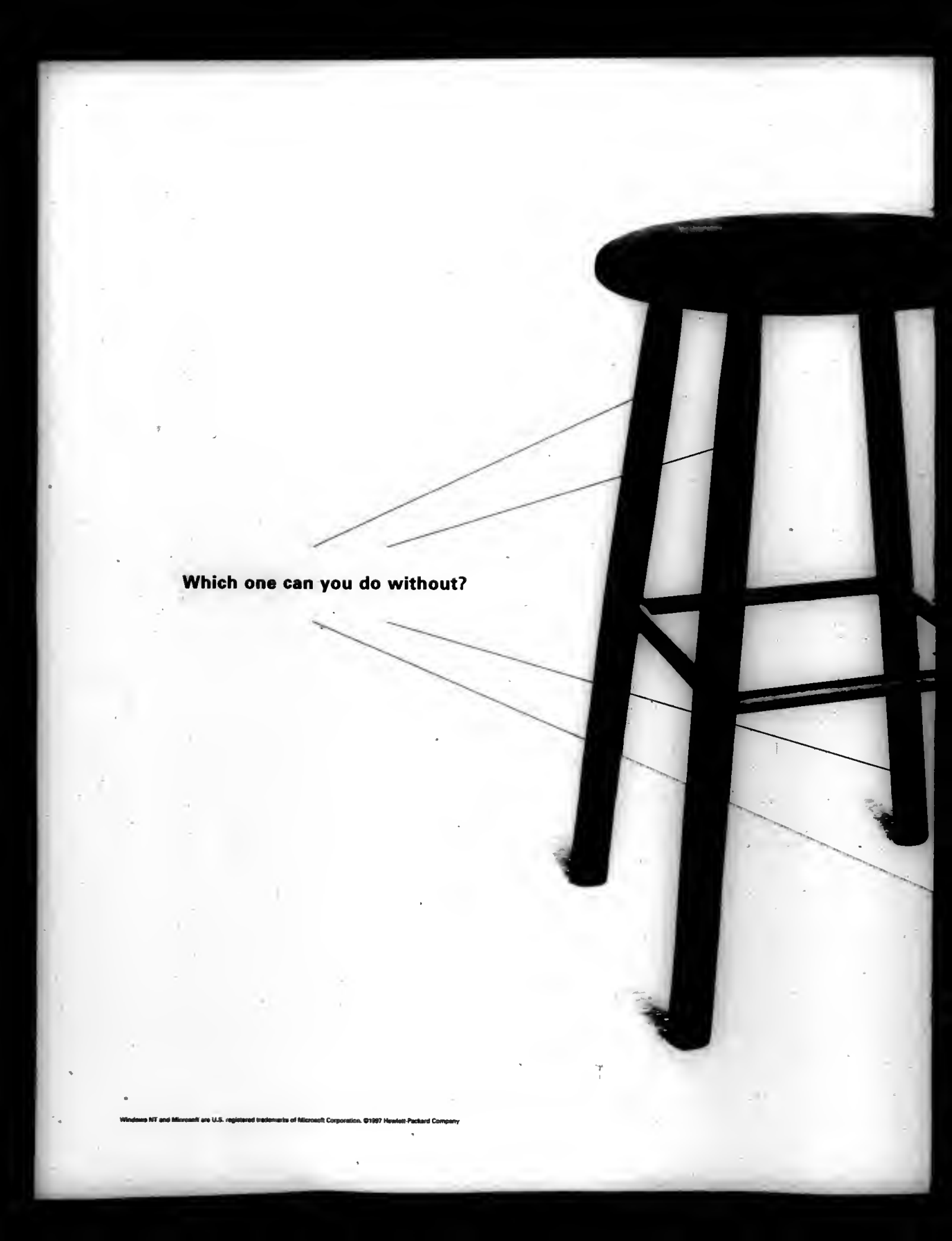

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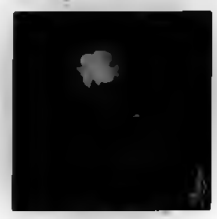
FORGET SILICON VALLEY; THINK RUBBERMAID



Information services is in the business of innovation. But which type of innovation — Silicon Valley-style or Rubbermaid? I vote for Rubbermaid.

The kind of innovation we need in IS has nothing to do with the Silicon Valley variety. In fact, IS organizations ought to disassociate themselves from the Valley every chance they get.

Take a close look at life in the Valley; about all it has in common with IS is an interest in computers.

The Valley is a hothouse of high-risk start-ups. It's about the next "new" something and naturally turns to hype to attract talent and money. It is insular, with a growing detachment from the East Coast and very little contact with business outside high tech and high finance. Valley executives are caught up in internecine ego clashes, Internet gold-panning and potshots at Bill Gates.

The Valley is indifferent to its customers: The quality and reliability of its products are the poorest for just about any type of goods. Service? All it offers are pathetically limited warranties, lousy manuals and 1-800-HOLD customer "disservice" lines.

I'm not saying we should flood Silicon Valley; I'm just saying it isn't a normal place. Just as your local NFL team requires a top linebacker who is a little sociopathic, Silicon Valley needs some unusual people who are overmotivated and very narrowly focused.

A DIFFERENT WORLD

IS is in a different business from the Valley. The profile of the effective IS organization is almost the opposite of a Valley firm: medium-tech and even low-tech where most appropriate; risk-balancing, with careful attention to reducing business and organizational risk; offering and honoring warranties and service-level agreements; hype-dampening, not shilling; unselfish, with the aims and identity of a professional committed to service; cosmopolitan; and broad in views and contacts.

That's just as much the base for innovation as the Valley profile. But it's Rubbermaid's kind. Rubbermaid is a brilliant innovator.

The company makes all those household items that are in just about everyone's kitchen and bathroom. Its cross-functional teams generate a constant flow of new products, which have a very low market failure rate even though the company doesn't do test marketing.

Those products meet the needs and concerns of people in their everyday lives. They exploit innovations in technology with new materials and manufacturing processes.

Throughout the roughly 40 years of IT application in organizations, "innovation" has been associated with "high tech," "new," "advanced" and the like.

For IS, shouldn't innovation mean innovation in the use, not supply, of technology? Rubbermaid innovates on behalf of the customer.

That's IS's job, too. Rubbermaid focuses on making the product reliable and easy to use, offering value for money and with warranties. Rubbermaid doesn't put the customer at risk.

Quality control and consumer protection are at the center of its operations, not out on the periphery. It should be so for IS, too.

A WARY TRUST

IS's customers have no choice but to trust IS; and it's too often a very wary and half-hearted trust.

The great brands of the world — Rubbermaid, McDonald's, Federal Express and Disney, for example — don't let you down. But IS does let customers down and does so often, with the Silicon Valley mind-set —that innovation is risky — an implicit excuse.

IS organizations don't need vision and strategy so much as a good reputation. That rests on defining just what "innovation" means and what risk the customer will accept.

In Silicon Valley, "innovation" fundamentally means risk. For Rubbermaid, it means customer satisfaction without customer risk.

That's the right reputation and self-image for an innovative information services — not systems — organization. □

Keen can be contacted at www.peterkeen.com. *His new book,* The Process Edge: Creating Value Where it Counts, *was published in June by Harvard Business School Press.*

RESOURCES FOR IS MANAGERS: CONFERENCES

Networld/Interop '97
Georgia World Congress Center, Atlanta
Oct. 6-10

Although it isn't as Brobdingnagian as Comdex, Networld/Interop is definitely one of the top expositions on enterprise-wide applications and networking.

There will be plenty of booths and sessions that deal with the Internet, network management and security. Keynoters will include William Friel, chief information officer at Prudential Insurance Company of America; Edward Kozel, chief technology officer at Cisco Systems, Inc.; and Karyn Mashima, vice president of advanced multimedia communications at Lucent Technologies, Inc.

Bring comfortable shoes, and book your flights and hotels right away — last year, overbooked hotels sent attendees miles from the city center.

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or (415) 372-7079
URL: *www.sbforums.com*

Gartner Group's Symposium/IT Expo
Walt Disney World, Lake Buena Vista, Fla.
Oct. 6-10

When it comes to influencing IS decision-makers, no one can top Gartner Group, Inc. Thousands of IS managers seek out Gartner's rankings, predictions and analysis before they make their purchasing and planning decisions.

At this weeklong symposium, Gartner analysts will present their comprehensive view on IS trends. The all-star CEO lineup that will appear at the exposition includes Bill Gates of Microsoft Corp., Scott McNealy of Sun Microsystems, Inc. and Jim Barksdale of Netscape Communications Corp. The conference's 37 session run the gamut of IT issues.

Fee: $1,695-$2,395
Phone: (800) 778-1997
Fax: (800) 778-1998
E-mail: apearce@gartner.com
URL: *www.gartner.com*

Association for Information and Image Management International Technology Forum
McCormick Place, Chicago
Oct. 14-17

If you need to sort out all the vendor claims and pitches to help create a clear and orderly automation strategy in workgroup computing, this conference may have plenty of answers for you.

The forum will present nearly 50 topics, split among five tracks: enterprise solutions, core technologies, workflow, document management and Internet/intranet. The keynote speakers will include technology analyst and author George Gilder. He advised the Reagan and Bush administrations and helped pioneer the creation of supply-side economics.

Fee: $745-$895
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Fax: (312) 332-3905
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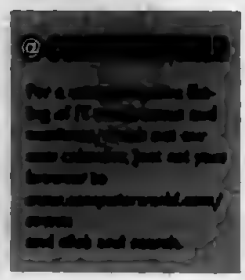

Buyer's Guide

Data Mart DYNAMICS

GARY KNOWLTON

TUTORIAL

By Amy Malloy

You'll know if you need a data mart because you'll have users pounding on your door demanding one. Your problem isn't going to be whether you should build a data mart; it's going to be how to ensure you aren't dumping your data into a void, leaving your company without a return on investment.

Computerworld spoke with six analysts, who offered advice for those who are new to data marts. But before we talk about advice, let's address the big question: What is a data mart?

Symbolic of this market full of vendors and jargon, we received six slightly different definitions.

Tutorial, page 100

CASE STUDIES

By Sharon Gaudin

Executives looking for smaller, bite-size chunks of information are turning more of their attention to the data warehouse's younger cousin, the data mart.

But they're also finding that although data marts may be smaller and easier to manage and manipulate than warehouses filled with multiple terabytes of information and endless rows of elements and histories, some of the pitfalls still can be dangerously large.

"It's not an easy undertaking," says Allan Stern, vice president of research and development at Boston-based cable company MediaOne. "Building

Case studies, page 100

TUTORIAL

CONTINUED FROM PAGE 99

But for purposes of this article, we'll work with the following definition: A data mart is a collection of databases and tools focused on a specific business problem. Size alone doesn't define data marts, though they tend to be smaller than data warehouses, which are enterprisewide collections of data that span numerous business areas and topics.

As with the definition of data mart, the challenges and solutions surrounding data marts are varied. The analysts provide their viewpoints on starting from a data warehouse and segmenting off data marts, building up from data marts to a data warehouse, buying prepackaged data marts and building your own data marts.

TOP-DOWN VS. BOTTOM-UP

It's unlikely that two companies will build a data mart the same way. Each comes to the table with its own set of requirements, which makes the decision of how to go about building a data mart very subjective.

Analysts talk about two basic styles: the top-down and bottom-up approaches. Top-down means starting with a data warehouse and spawning data marts from that central repository. Bottom-up means starting with data marts and building toward some kind of data warehouse.

Analysts tend to recommend the top-down approach. It gives you flexibility and the ability to repopulate the data when changes occur, says Kevin Strange, an analyst at Gartner Group, Inc. in Santa Clara, Calif. Data marts will come and go just as applications come and go, Strange says.

Working from a data warehouse makes it possible to delete a data mart and replace it with a new one. The data is already sitting in the warehouse prescrubbed, preintegrated and pretransformed, Strange says. "The only requirements that users have is that their requirements will change," he says.

The benefit of going from the top down, from a data warehouse to a data mart, is the overall view it gives you, says Ted Schadler, an analyst at Forrester Research, Inc. in Cambridge, Mass. The data mart will know where aggregated data lives. It will know how to formulate a query that gets some of the data from the marketing database and some from the financial data mart, Schadler says.

Though most analysts say the top-down approach is ideal, it doesn't always happen this way. Companies may want bottom-up if they simply need a data mart to address a specific problem and don't anticipate needing a full-blown data warehouse.

Regardless of which approach an organization chooses, the most important precaution is to ensure that data marts talk to one another. "Stovepipe data marts [data marts that don't communicate with one another] are death," Schadler says.

If a company does build its data marts independent of a data warehouse, it's important that there be some consistency. Enterprisewide metrics, or common definitions of data, are necessary to avoid erroneous answers from queries across data marts, says Bob Moran, director of decision-support research at Aberdeen Group, Inc. in Boston.

Creating cohesiveness certainly isn't easy. "Trying to build various data marts to serve strategic decision-support needs is like herding cats. It is very hard to get them all moving in the same direction in any kind of unison," Strange says.

PREPACKAGED DATA MARTS

When it comes down to setting up the data mart, users can buy a prepackaged data mart or build one. A prepackaged data mart generally comes with transformation software, meta-data management tools and some query tools, Strange says.

Prepackaged data marts can be generic or application-specific. Analysts cite Information Builders, Inc.'s SmartMart, Oracle Corp.'s Data Mart Suites and IBM's Visual Warehouse as examples of generic prepackaged data marts. They offer some data movement, data access tools, database tools and consulting, explains Aaron Zornes, executive vice president at Meta Group, Inc. in Burlingame, Calif.

It's also possible to purchase a prepackaged solution to address a particular application. For example, a company could buy a data mart from Oracle specifically for its SAP AG R/3 application or

CASE STUDIES

CONTINUED FROM PAGE 99

our data marts has been one of the most difficult things I've done in my 18 years in the business. I think people forget to bite off small pieces and worry about the whole later on. It's easy to get lost in all that data and all those elements."

Computerworld interviewed four managers responsible for their companies' data mart projects. Here's what they had to say about their experiences and how they might do it differently.

MEDIAONE, INC.

At MediaOne, Inc., the marketing, finance and operations groups about a year and a half ago were all jostling for information to better market the company's growing array of products and services. It needed to get a better look at how it was spending its money, who wanted to buy its products and how well it was servicing its customers in an increasingly competitive market.

"We launch new products fairly often," Stern says. "We want to know ahead of time who would be the potential takers. It wouldn't serve us well to contact people about our Internet access if they don't even own a computer. And we decided data marts would be the best way to get at that information."

MediaOne tackled the awe-inspiring job of building a 2T-byte data warehouse and a 90G-byte data mart at the same time. The warehouse was built to hold all of the company's historic operations, marketing and sales information. The data mart focuses on customer information, giving the marketing department a clearer view of who is buying certain services and what other services they might buy.

Stern says he hopes the project will boost revenue by helping marketers better understand who's buying from MediaOne so they can pinpoint their sales efforts. The company also hopes to use operating information to speed repair time.

Two more data marts are under construction. One is focused on the company's operations, gauging the kinds of problems customers report and how long it takes workers to fix them. The other is for the finance department and offers information on how a region performs compared with others.

Stern notes that MediaOne runs its databases solely on Oracle Corp.'s Oracle7 database, using reporting tools from Dimensional Insight, Inc. and analysis tools from Microstrategies, Inc.

IDAHO POWER CO.

Executives at Idaho Power Co., a Boise, Idaho-based utility company with 400,000 customers, needed a better way to understand the 2.5 million rows of information in their 5-year-old data warehouse. They decided to answer their questions with the help of about eight new data marts.

The utility is trying to take very detailed looks at its information, breaking it down into income statements, operations and expenses. Bob Simms, management accounting team leader at Idaho Power, says the company is trying to control expenses, for example, by seeing where it spends the most money and at what points in the year or month. Having that information will help prepare the utility's managers so they can schedule more workers at certain points, for example, saving on overtime pay.

"In general, we're turning a lot of financial information into management information," Simms says. "Data marts allow us to summarize the information so it's easier to understand. Our people don't need to go through all that information row by row through millions of rows. It's easier to get your mind around fewer numbers."

So Simms, using IBM's DB2 database and Microsoft Corp.'s Excel, Access and Query applications, set out to build several data marts to better manage information. Three are running, and four more are in development. The smallest one is 200 rows, and the largest blossoms up to 10,000 rows of information.

"We wanted to be able to take a real look at our expenses," Simms says. "We wanted to know why we spent so much money on delivery in January. It

one from D2K, Inc. that specializes in PeopleSoft, Inc. financials or human resources. These are horizontal data marts focused on a horizontal corporate function such as marketing or finance, Zornes says.

Vertical data marts, designed for specific industries, are also available. For instance, Lightbridge, Inc. offers one for the telecommunications industry, and Fiserv, Inc. sells one for the banking industry.

One-size-fits-all offerings sound good in theory but may not work for every company. Prepackaged data marts assume you won't object that the database might be different from your company's standard database. They also assume you have your data act together, your data is in good condition and you don't have a lot of data that was hand-coded in-house, Zornes says.

But if a company can use such a product, there clearly is value there. "If I can bring in a tool and simply run it over my data and have it tell me who are my more profitable customers, or which ones might be most susceptible to fraud, I can very quickly take advantage of that and save myself some money," Zornes says.

And the way to go doesn't have to be either/or. Some companies use a prepackaged mart as a base and augment it with third-party tools or modify it to match their situation. Vertical data marts will save many expenses for some people, Moran says, while satisfying 99.9% of their needs. For others, a vertical data mart will satisfy only 60% of their needs, and they will try to tailor it, he says.

Strange has encountered users who have to modify prepackaged marts. "What I am finding with the data mart in a box, even if the users are acquiring them, is that they end up augmenting the tools with some of

Tutorial, page 102

DATA WAREHOUSES VS. DATA MARTS

Scope		• Specific application requirement • LOB, department or user area • Business process-oriented • Multiple databases with redundant data
Data perspective		• Detailed (some history) • Summarized • Highly denormalized
Subjects		• Single partial-subject area • Multiple partial-subject areas • Operational source snapshot
Data sources	• Many	• Few • Operational, external data • OLTP database snapshot • "Bootleg" data extract
Implementation time frame	• 9 to 18	• 4 to 12 months
Characteristics	• Flexible, • Data orientation • Durable/strategic	• Short life/tactical • Restrictive, nonextensible • Project orientation

Source: Gartner Group, Inc., Stamford, Conn.

GUIDE LINES

For those building data marts independently

1. Adequately staff your data mart project with a team separate from the team for the data warehouse project.

2. Leverage the data mart planning effort with the data warehouse.

3. Be sensitive to the business area with the most urgent need for a tactical solution.

4. Limit the number of data sources to three. There will be exceptions to that rule, but typically, if you're building a data mart, try to keep the number of sources as small as possible.

5. Define a policy to prevent data mart proliferation to avoid redundant efforts.

Source: Kevin Strange, Gartner Group, Inc., Stamford, Conn.

will help us explain expenses and blips in payroll to our investors. And hopefully, it will help us predict expenses.

"When you can get the numbers on different trends into your data mart, it makes the information meaningful," he says. "We can see the numbers through graphics, which is a lot easier to do than staring at rows and rows of figures. For instance, we can see that we're usually hit with bad storms in January, so we can prepare for those extra expenses."

SAN DIEGO GAS & ELECTRIC CO.

At San Diego Gas & Electric Co., a $2 billion utility in San Diego, information systems managers decided to skip building a data warehouse and move straight to data marts. But now that the marts are running, they need a warehouse to keep their information uniform.

"We could build data marts at a low cost and with quick results," says Dave Gillespie, manager of information management at San Diego Gas & Electric. "But we've found that there's an inherent risk in building too many marts without having an enterprise-level data warehouse. I don't want to be concerned with remapping information changes to several different marts. With a central data warehouse, I can make the change once, and it will feed that information down to the data marts."

The first data mart, which cost the utility about $125,000, integrated its commercial customer information that had been stored in different divisions. The second, which cost $70,000, focused on residential customer information, such as historical data.

Gillespie says each subsequent data mart was cheaper and easier to build because of his team's increased experience with the projects and their tools.

BLUE CROSS/ BLUE SHIELD OF NORTH CAROLINA

The challenge for Blue Cross/Blue Shield of North Carolina in Durham was organizing the data marts already in operation. Carol Flaherty, manager of corporate data warehouses at the insurance company, says she's just finishing off closing up four old data marts and building a centralized data warehouse that will feed four new data marts.

"Each of the four different divisions here has had its own data mart for years, and they're all disparate," Flaherty says. "Over time, folks in different business units are going after the same data, but the problem is it's stored differently and accessed differently. So they ask

Case studies, page 102

GLOSSARY

Meta data: Data that describes the characteristics of stored data.

Data mart: A collection of databases and tools focused on addressing a specific business problem. Size doesn't define data marts, but they tend to be smaller than data warehouses.

Data warehouse: A database designed to support decision-making in an organization. It is batch-updated and structured for fast online queries and summaries for managers. They can contain enormous amounts of data.

Data mining: Exploring detailed business transactions. It implies digging through tons of data to uncover patterns and relationships within the business activity and history.

Relational database: A database organizational method that links files as required. Relationships among files are created by comparing data, such as account numbers and names. A relational system has the flexibility to take any number of files and generate a new file from the records that meet the matching criteria.

OLAP (online analytical processing): Decision-support software that lets a user quickly analyze information that has been summarized into multidimensional views and hierarchies. Traditional products are known as multidimensional OLAP. A relational OLAP tool extracts data from a traditional relational database.

Source: Computer Desktop Encyclopedia and analysts

QUESTIONS

Questions to ask when you go to a transformation tool vendor, according to Bob Moran, Aberdeen Group

- How well does it do the functions?
- What kind of work does it do automatically for you?
- What do you have to do to reduce how often you or your staff has to do manual functions?
- Does it support a workgroup at that bench, helping you work on versions as you move through it?
- Does it support the sources you want?
- Will it be able to support the sources and complex transformations that you may want in the future?
- How well does the tool collect meta data, technical and business meta data?

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For related Web sites and more information on data marts, visit our Web site at: www.computerworld.com/guide

TUTORIAL

CONTINUED FROM PAGE 101

their own development, extending the capabilities of those products, he says.

The cost of prepackaged data marts varies according to specialization. As data marts become more specialized, they go up in price, Morris explains. For instance, a generic prepackaged data mart might cost about $39,000, whereas a more specialized prepackaged data mart might cost close to $100,000, Morris says.

BUILD IT YOURSELF

If a prepackaged data mart doesn't meet a company's needs, the company can build one from scratch. Deciding which tools to use is the secondary issue in the data mart process. Many companies struggle with organizational and political issues without ever getting to the tools decision, says Wayne Eckerson, director of business intelligence and data warehouse service at Patricia Seybold Group in Boston.

To build a data mart in-house, several tools are necessary. You'll need transformation and extraction tools to access the data. Vendors that sell these products include Informatica Corp., Sagent Technology, Inc., Prism Solutions, Inc. and Carlton Corp.

And you'll need a relational, specialized decision-support database or multidimensional database, Eckerson says. Vendors include Oracle, Informix Software, Inc., Microsoft Corp. and Sybase, Inc.

Meta-data managers will be needed. Meta data, or data that describes data, is used to track information about the originations of data. It tells the user how the data got cleaned, how it got distributed, who's responsible for it and how often it gets updated, Schadler explains. Vendors include Prism, Platinum Technology, Inc. and Viasoft, Inc.

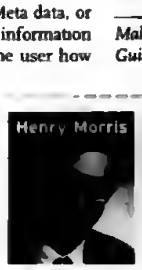
Administration facilities that monitor the use of data are available from Hewlett-Packard Co. and Pine Cone Systems, Inc. Business intelligence tools to access the data come from vendors such as Business Objects, Inc., Cognos, Inc. and Brio Technology, Inc., analysts say. And pure reporting tools come from vendors that include Sqribe Technologies, Inc. and Actuate Software Corp.

There are data cleansing tools. Some, such as the one from I.D. Centric, a unit of Firstlogic, Inc., focus on a specific function, such as name and address cleansing or scrubbing. Other tools are more general-purpose, such as the one from Vality Technology, Inc.

Vendors also provide tools that give users access to data marts via the World Wide Web, which makes it possible to provide data access to more users. "The Web promises to broaden the base of users that access data warehouse information by eliminating the need to have to install, maintain and upgrade desktop software on remote desktops," Eckerson says.

Moran agrees that the Web will greatly impact the data mart world. "To my mind, the Internet, as well as intranets and extranets, will become both an enabler and, in another sense, a driver," he says. □

Malloy is Computerworld's associate editor, Buyer's Guide.



ANALYSTS FEATURED IN THIS REPORT: Ted Schadler **Forrester**, Wayne Eckerson **Patricia Seybold,** Henry Morris **IDC**, Aaron Zornes **Meta**, Bob Moran **Aberdeen**, Kevin Strange **Gartner**

CASE STUDIES

CONTINUED FROM PAGE 101

the same questions but get different answers."

She notes that the company was focused solely on answering claims about 10 years ago when the original data marts were built. Now there is a strong focus on decision-support that is driving the push for new data marts and a warehouse. "The way it happened, there was no plan or strategy," Flaherty says. "It was each unit striving for survival. But we're evolving. Who knew decision-support would be so critical?"

She says the warehouse will be running in September, along with a marketing-focused data mart. The other marts and an expanded data warehouse will come within a year. She is using the Oracle7 database and Cognos, Inc.'s Impromptu query tool.

ADVICE FROM THE FRONT

Nearly all the IS managers interviewed say the key to building a good data mart or warehouse is knowing what information should be coming out of it.

"The toughest thing is getting management to tell us what information they want," Simms says. "Paper reports are still floating around, and I'd love to pilfer through their desks and see what information they're actually looking at."

Stern notes that to keep IS in the know, it's important not to let contractors interview people on the business side. "The consultants can make promises they don't have to keep," he adds. "It gets tricky because suddenly some guy is saying that they've been promised the world, and now it's up to me to find out if they really need the whole world. I need to know what they need today, and I don't get that from the contractors."

And Gillespie and Flaherty warn that though data marts are terrific for supplying specific information, they shouldn't be relied upon solely. "Having data marts based on a data warehouse is the way to go," Gillespie says. "You need to centralize your work and your focus. That's the way to make it work." □

Gaudin is Computerworld's senior editor, application development.

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SHAKEUP at the FCC

THE COMMISSION HAS A FUL[illegible]E A[illegible]D A LOT O[illegible]NEW FACES

ILLUSTRATION BY JARROD GOODMAN

By Steve Alexander

Not so long ago, it seemed like all the FCC did was to make sure nobody said dirty words on TV.

All that changed in the 1990s. Reed Hundt, forceful and media-savvy, signed on as chairman of the Federal Communications Commission in 1993. Soon the Internet exploded. Now wireless communication is set to do the same. The FCC has become a critical, high-profile player in technology, communications and entertainment, fields that are growing very difficult to separate from one another.

It's a tricky time for the FCC to undergo an 80% turnover of commissioners.

Four people have been nominated to the five-member FCC by President Clinton, and there seems little doubt they will be confirmed. The timing of Senate confirmation hearings and a confirmation vote is unclear, but most believe they will occur before the end of the year.

"It's unusual to have this much turnover, particularly at a time when there is so much activity in this area," says Jack Nadler, an attorney at Squire, Sanders & Dempsey, a Washington law firm that represents the

Shakeup, page 106

SHAKEUP at the FCC

CONTINUED FROM PAGE 105

Information Technology Association of America (ITAA). "In 1997 and 1998, the computer industry ignores Washington in general, and the FCC in particular, at its peril. What the FCC does will affect their business in very direct ways."

For example, the computer industry's Internet Access Coalition recently won out over the telephone industry in the FCC debate over whether Internet service providers should pay "access charges" as long-distance telephone companies do. Had the computer industry lost, it would have been the death of flat-rate Internet pricing, which would have had a profound impact on the computer industry, Nadler says. "And there are a lot more of those important issues coming down the road," he says.

NEW FACES

There are political and interpersonal implications in the makeup of the new FCC. "There has not been a Democratic majority on the FCC since Lyndon Johnson was president," says Andrew Jay Schwartzman, president of Media Access Project, a nonprofit, public interest law firm in Washington. (By design, the FCC commission is split on party lines, with the Presidential party holding a 3-2 majority.)

And, Schwartzman says, the nominees "will be replacing very contentious and sharply split commissioners ... with new people who are likely to get along with each other." Schwartzman characterizes the four nominees as "moderate or moderate left."

How the FCC's four new commissioners will affect its decision-making role is far from clear, although no one expects radical departures from the FCC's current direction.

The best known of the nominees is Democrat William Kennard, 40, who was nominated to replace outgoing Chairman Hundt. Kennard has been the FCC's general counsel since 1993. Previously, he was a communications lawyer in Washington who dealt with broadcasters, cable TV companies, TV programmers and cellular telephone companies.

He has worked closely with Hundt at the FCC.

"Bill's style is a little bit quieter [than Hundt's], and he's more easygoing," says Mary McDermott, a vice president of the Washington-based U.S. Telephone Association, a trade group for 1,200 local telephone companies. "Many lawyers fall into the trap of being naysayers or deal-killers. Bill smashed that image of lawyers at the FCC by making sure his people worked as part of the team."

Another nominee with a Washington track record is Republican Harold Furchtgott-Roth, 40, who has been the chief economist for the House Commerce Committee. Robert W. Crandall, a senior fellow in economic studies at The Brookings Institution in Washington, has co-authored a booklet on cable TV with Furchtgott-Roth and calls him "a pro-market person who favors deregulation wherever possible."

Republican nominee Michael Powell, 34, has been chief of staff at the Justice Department's antitrust division since December 1996. The son of former Joint Chiefs of Staff Chairman Colin Powell, he is "unabashedly pro-business and pro-competition," says Dave McClure, executive director at the Alexandria, Va.-based Association of Online Professionals.

Little is known about Democratic nominee Gloria Tristani, 43, a lawyer who for nearly three years has been a commissioner of the New Mexico State Corporation Commission, which oversees the telephone industry. She was involved in enacting a 1995 state law that authorizes the commission to fine telephone companies for failure to comply with the law or commission orders, or for causing substantial harm to consumers or the public interest. The remaining FCC commissioner is current FCC member Susan Ness.

TO-DO LIST

One of the main issues the FCC faces in the coming months is local telephone competition, which affects the computer industry by encouraging new market entrants with data-oriented phone services and more voice-service providers. The FCC will need proof that local competition is happening before it will let the Bell operating companies enter the long-distance market.

"The issue most squarely before the FCC will be the expected applications of the regional Bell phone companies to provide long-distance service," McDermott says. "Those applications will give the FCC a vehicle with which to assess the progress of local competition in individual states."

The FCC recently turned down the application of Ameritech, the first Bell company to apply to be allowed into long-distance markets, on the grounds that local competition hadn't advanced far enough. Indeed, one of the major problems the FCC will face is the perception in Congress that local telephone markets haven't been opened to competition as envisioned in the 1996 Telecommunications Deregulations and Reform Act.

The FCC also seeks a Supreme Court ruling on a decision by the Eighth U.S. Circuit Court of Appeals, which ruled in July that the FCC exceeded its authority by setting prices for new local telephone competitors to lease pieces of existing local phone networks or buy local phone service and resell it to consumers. The appeals court said that authority belongs to the states.

Nadler says the FCC also may have to reevaluate how to draw the line between regulated telephone services and unregulated information services. It's a distinction the computer industry would like left alone, but the FCC is under pressure to revisit the issue because of the growth of Internet telephony, which in some cases resembles traditional phone service, he says.

Some phone companies want the FCC to ban Internet telephony. The FCC isn't likely to do that, but it may impose some restrictions on certain types of Internet telephony, Nadler says. "The danger is that the FCC will respond in ways that could erode the very strong wall that has been built up between regulated communications and nonregulated information services."

But Internet telephony is only part of a larger FCC plan to look at whether incentives should be offered to encourage phone companies to meet data transmission needs.

Nadler says the regional Bell companies and the Internet industry are on opposite sides of the fence on the issue.

"The Bell companies and some other carriers are taking the position that the FCC should give the incumbent phone companies reduced price regulation incentives and the ability to impose permanent charges on Internet service providers," he says.

In exchange for that, Nadler says, "the phone companies would deploy new technologies such as XDSL [a phone technology for high-speed data transmission over existing phone lines] and new packet data networks that are optimized for data traffic before the call reaches the local exchange carrier's switch. But the Internet industry says the answer to deploying new technologies is competition. The only way to get deployment is to create rules that allow new entrants into the local market."

Jonathan Thompson, vice president of the Arlington, Va.-based Consumer Electronics Manufacturers Association, says the FCC also needs to finalize the V-Chip specification, under which a computer protocol called the "vertical blanking interval" on a special TV set integrated circuit receives a data stream that is transmitted along with a TV broadcast. The data stream contains a viewer advisory on the content of the TV program. Congress has mandated that the chip be in every TV set beginning in 1998.

McDermott says, "You have to wish good luck to anybody who would take these FCC jobs — there's so much going on."□

Alexander is a freelance writer in Edina, Minn.

IT Careers

THERE'S NO PLACE LIKE HOME

Flexible workplaces are doing away with permanent cubicles or workstations for IS. But do these office alternatives leave IS professionals out of the loop?

By Jeffrey D. Zbar

WHEN 90 INFORMATION SYSTEMS workers at Merrill Lynch & Co.'s offices in Somerset, N.J., converge on their new 30-cubicle workspace later this fall, they'll be pioneering workplace change at the financial services company.

Workers who plan on any given day to visit the "Atrium Hotel," as the flexible worksite will be called, first will hit the company's intranet to reserve a space. When they arrive on-site, IS managers and subordinates alike will go to the reservations kiosk to check in and learn their assigned cubicle.

Once at the cubicle, they'll dock their laptop computer and begin their day in the office. The kiosk will have automatically transferred their telephone extension from their home offices to the cubicle. At day's end, they're transferred back.

"None of these people will have a telephone anymore per se," says Camille R. Manfredonia, vice president of the company's alternative work arrangement program. "They'll have a telephone number."

But workers thrust into temporary cubicles without familiarity or the personal effects often displayed at a traditional office can feel disconnected, consultants say. For IS personnel, the situation can be worse. These "pack rats" now find their program manuals, reference guides and even pictures and personal knickknacks moved from permanent shelves to wheeled storage carts that are locked away at the end of the day, says Gil Gordon, a workplace consultant in Monmouth Junction, N.J.

STAYING IN CONTACT

At Merrill Lynch, the same kiosk that checked the worker in to the Atrium Hotel will help a user find that worker. Electronic mail and phones will further help avoid lost contact between IS and user groups, Gordon says.

"The image of the frustrated user running around looking to grab the IS person by the collar is not completely true," Gordon says. "As long as they're reachable reliably and electronically in the office, a well-run hoteling system also can help map people, so IS will never be lost."

Sue Davelman, a Merrill Lynch associate and project leader involved with alternative offices in Somerset, wants to take the concept to its fullest. She's "teleworked" three days per week for more than two years and since April has shared office space with a co-worker when she's on-site. A beeper already keeps Davelman connected wherever she is. And she's learned to share her office space — right down to dividing drawers and wall space equally.

"We both have pictures of our children on different sides of the wall," Davelman says. "I love this arrangement so much — whatever it takes to make it work, I'll do."

But not all IS organizations have found the virtual office setting workable. At Delmarva Power & Light Co. in Newark, Del., a 15-year-old telecommuting program with dial-up access for IS personnel failed to evolve into alternative offices, says Alex Dobkowski, manager of computer and network operations.

The very factors that make virtual offices work — dispersing workers into the field or home offices so the remainder can utilize fewer desks — render it unreasonable for IS at Delmarva, Dobkowski says. The majority of the 110 IS staffers still need to be readily accessible. And with limited staff, they need to consult with one another to remedy situations that may arise with the 1,900 PCs at the company's offices.

"We're nibbling at the edge of 'virtual officing' for other departments," Dobkowski says. "But it's not likely for our department." □

Zbar is a freelance writer in Coral Springs, Fla.

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7:00am	- 8:00am	Registration and continental breakfast
8:00am	- 9:00am	Peter de Jager, presents *"Year 2000 Computer Date Crisis"*
9:00am	- 9:15am	Break
9:15am	- 10:00am	Jim Olivero, presents *"SoftFactory/2000: A Unique Approach"*
10:00am	- 10:30am	Q & A

Seminar Locations

☐ Thursday, Sept. 25th — Hyatt Regency O'Hare, Rosemont, IL
☐ Friday, Sept. 26th — McLean Hilton, McLean, VA
☐ Monday, Sept. 29th — Crowne Plaza, Toronto, Ontario, Canada
☐ Tuesday, Sept. 30th — LA Airport Marriott, Los Angeles, CA
☐ Friday, Oct. 3rd — Sheraton Towers, Boston, MA

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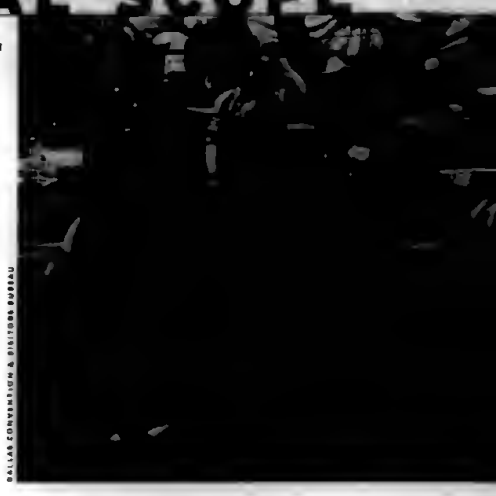

DALLAS CONVENTION & VISITORS BUREAU

By Leslie Goff

HELL OR BLISS

The Dallas IS job market is pure bliss or sheer hell, depending on which side of the hiring desk you sit

IS professionals: Paradise found

Scot Shepherd wasn't even looking for a job when he landed one that offered a higher salary, more vacation and better long-range opportunities. The technical administration manager at Pillowtex Corp., a bedding manufacturer in Dallas, continues to average three calls a week from recruiters at other companies.

When Linda and Don O'Donnell moved back to Dallas from Chicago, it took them each less than six weeks to find jobs with the benefits, salaries and perks they wanted — including consideration for their role as parents. After years of being required to travel, Don wanted a job that allowed him to stay put. Linda wanted to telecommute occasionally. Both wanted a short drive to the office.

Each found positions as senior systems engineers working on year 2000 conversion projects. The jobs were located five minutes from their home at Electronic Data Systems Corp. in Plano, Texas, a Dallas suburb.

Tell me more!

For more information about Dallas and the salaries being paid to IS professionals, visit our Web site at:

www.computerworld.com/careers

After suffering through a market that for several years in the early '90s favored employers, information systems professionals in Dallas and adjacent Fort Worth have found paradise. They are reaping the benefits of a supply-and-demand gap driven by a healthy, diversified industry base.

"IS professionals are pickier than they have ever been about location, money, benefits and long-term opportunities," says Kris Mosley, an account executive at Best Tech Consulting, a technical recruiting firm in Plano. "And if they have a good skill set, it isn't unusual for them to have three or four offers at once, so they can afford to be picky."

Mosley says IS pros are "broadening their concept of compensation," seeking — and receiving — sign-on bonuses, tuition reimbursement, structured bonuses, 401(k) plans and stock options. One employer granted a new recruit relocation expenses in the neighborhood of $10,000 — and the new employee only lived 50 miles away.

In addition to asking for more — and holding out until they get it — IS professionals in Dallas are experiencing much shorter job-hunting cycles. Don O'Donnell says that compared with his job-seeking experience in 1991, this year he received many more callbacks per resume submission.

"I'd estimate that for every opportunity I heard about from a recruiter or the paper, I had a one-in-four chance of getting a call, and 20% of the time I would get an interview," he says.

Employers: Paradise lost

EDS in July brought in 45 recent high school graduates to spend a morning visiting its Information Management Center, year 2000 and New Media units. All the students had scored between 1,400 and 1,600 on their Scholastic Assessment Tests.

"These are the types of students we would like to get into our internship and co-op programs and interest them in joining EDS after college," says Gwenn Gilbert, an EDS southwest region recruiting manager. "It's one of the ways that we're digging in deep to market the company and let kids know who we are."

EDS and other Dallas/Fort Worth area employers — from large organizations such as The Sabre Group to small start-ups such as Internet services firm Linked Planet Media Corp. — are all digging in deep, developing new IS recruiting strategies to respond to a growing supply-and-demand gap in the region.

The skills gap runs the gamut from conventional technologies such as mainframe support and Cobol programming, to LAN and WAN infrastructure and support, object-oriented programming and relational database programming and administration. Legacy skills are particularly in demand, because several Texas universities have dropped Cobol from their curricula, IS managers say.

The Sabre Group, a subsidiary of AMR Corp., the parent company of American Airlines, is hiring about half its employees from outside the Dallas area.

Campus recruiting accounts for between 5% and 10% of new hires. And in the past year, Sabre began hosting its own job fairs, drawing between 400 and 500 potential recruits at a time.

"Employee referrals are still the best source of top talent," says Michael Haefner, vice president of human resources at Sabre. "We have had various bonus programs in place for employee referrals, such as offering fees of up to several thousand dollars to employees. We are reviewing those programs and expect to consolidate them. We're looking at that as something we may have to do more of." □

DALLAS BUSINESS AND LABOR MARKET

Dallas, with a population of 1,044,641, is the eighth-largest city in the U.S. It ranks as the third-largest hub for corporate headquarters and high-tech companies in the country, making it the business capital of the Southwest.

10 LARGEST EMPLOYERS

Company	Total number of employees
AMR (parent of American Airlines)	29,000
Texas Instruments, Inc.	23,000
General Motors Corp. (parent of Electronic Data Systems)	15,236
Lockheed Martin Corp.	12,500
PepsiCo, Inc. (parent of Frito-Lay, Inc.)	11,899
Southwestern Bell Corp.	8,208
Randalls Food Markets, Inc.	7,762
NationsBank Corp.	7,700
GTE Corp.	6,999
Albertson's, Inc.	6,797

Source: *The Dallas Morning News*

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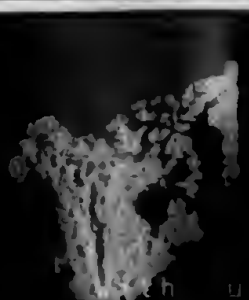

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For Petaluma, California opportunities, please send your resume to: DSC Communications Corporation, P.O. Box 750699, Dept. CW922, insert job code from above, Petaluma, CA 94975-0699; fax (707)792-6486; or E-mail (include job code) staffing@ccmail.dscc.com.

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We know that our continued leadership depends upon our people and that our ability to excel depends on the integrity, knowledge, imagination and skill of our team. And that's why we need you. If you're an exceptional IT professional, you can really make a difference at Merck and that can mean a difference to the world. In return, we offer creative, productive, results-oriented professionals more than jobs. We offer careers that provide continued personal and professional development and stimulating opportunities for intellectual growth. If you're ready to improve your career and make an impact on the world, consider the following positions available in our West Point, PA (30 miles north of Philadelphia) location.

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Client Server Project Leaders,
Client Server Programmer/Analysts
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- **Support Specialists-NT/Win 95/Exchange**
- **AS 400/RPG, J.D. Edwards, Essbase**
- **Visual Basic, Microsoft Access, Oracle, UNIX**

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To design, develop and support computer applications systems. Candidates should have experience in some of the following areas: **DB2, COBOL II, IMS DB/DC, TELON, PL1, CICS, OS/1, MFS, SAS, IDMS/ADSW, SAP-ABAP/4, IS-204, Client-Server Applications, Year2000 Tools, Endevor.**

SYSTEMS ADMINISTRATORS DATABASE ADMINISTRATORS APPLICATIONS DEVELOPERS:
To design, develop and endorse applications in a Client Server environment. Candidates with exp. one or more of the following areas: **UNIX, POWERBUILDER, ORACLE, PL/SQL, MIMIX, SMS, Visual Basic, Access 95, ODA/ODD, IDMS/Informix, Micro, LOTUS Notes, MS SMS, MSWindows, C PERL, Sarbanes, Tivoli, Evolonix, WinNT, AIX/SP2, HP-UX/MOSY, CORBA, SQL PowerTool, Erwin. SPX/IPX.**

SYSTEMS PROGRAMMERS:
With at least 5 years experience installing & tuning MVS/ESA Environment. Knowledge in some of the following: **VTAM/NC, Netview, Parallel Sysplex, TMP, MIM, HCD, RPCS, MICS & CA-ACF2 products.**

LANGUAGE SPECIALISTS:
With at least 3 - 5 years experience in engineering, planning & design corporate data communications networks in some of the following: **Windows NT, Novell Systems, MS Exchange, ATM Internet/Intranet, HTML, Cisco Routers, Bay Networks, HP Openview, Novell, WWW & Gateway Servers, TCP/IP, Token Ring.**

GENERAL ENGINEERS:
With at least 5 to 8 years experience in planning & design telecommunications for both Microwave and Fiber Optic Systems. Exp. in Project Management; **PBX/DEP Installations, ISDN transmission and Telephone switching.**

Please send or preferably FAX your complete resume to:
Al-Khaleej Computers - HRD, P.O. Box 2062, Al-Khobar 31952, Saudi Arabia
Fax (966) 3 894-6032. Email: carlton@bankco.com.bh

Software Engineer Responsible for design, development, customization, testing, debugging, & database administration of various software projects using Oracle7 Relational Database Management System. Specific duties include designing & developing applications in Graphical User Interface, Oracle front-end tool Developer/2000 in Client/Server architecture using WindowsNT 4.0, UNIX, or VMS; involved in Logical Data Modeling & Data Flow Diagrams of the application, defining appropriate test plans & participating in Unit, Integration, System, & User Acceptance Testings; monitoring, tuning & troubleshooting the implemented applications; involved in database administration of the Oracle database in installation, configuration, tuning, backup strategy, & creation of user functions. Min Requirements: Bach. Degree in Elctrcl Engnrng, or Math, or Computer Sc., or related field, & 2 yrs in job offered OR 2 yrs related occ. exp as Software Engineer, or Programmer, or Systems Analyst, or Consultant, or related field. Rel. occ. exp. must include 2 yrs exp. in the design, development, customization, testing, debugging & database administration of various software projects using Oracle7 Relational Database Management System. $80,000/yr, 8am-5pm, 40 hrs/wk, M-F. Applicants should respond to Case #71288, P.O. Box 8968 Boston, MA 02114. Applicants should submit two copies of his/her resume in response.

SYSTEMS ANALYST (Miami, FL area): Administration of personnel, prepare billing software plans, develop/supervise administrative debt control procedures, administer computer network systems, install new programs, instruct/advise personnel on computer use to register info & different functions, establish administrative A/P & A/R computer procedures, develop computer network systems, create user profiles with right to access programs & systems in accordance with function of each employee; create/modify programs to improve personnel, cargo & courier operative & administrative controls, coordinate with companies @ agents in other countries, transfer electronic data through the Internet or computers to lessen the digital workload keeping the customers informed of their shipments; knowledge of customs related computer programs procedures; knowledge in installing/administering Novell & Windows networks; assembly/installation of PC under multiple configuration, exp. in programming Fox language; knowledge in working with accounting procedures, exp. in procedures for shipments of courier/cargo utilizing Unix System, AOS/VS, Cobol, INFOS, SQL, exp. in communications TCP/IP, modems, typologies of networks. BS or equivalent in systems engineering, 2 yrs exp. 40 hrs., M-F 9AM-5:30PM, $38,300 p/yr. Send resume in Dept. of Labor, Bureau of Operations, 1320 Executive Center Dr., Suite 110, Tallahassee, FL 32399-0667, Job #FL1658162.

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Programmer/Analyst (DOT 030.162-014, NC client sites) Analyze, design, develop, code, maintain, test, upgrade & implement client's computer systems & subsystems. Design, develop, install, & test databases. Environment: SYBASE, Visual Basic. BS any major + 2 yrs exp, $36K/yr, 40 hrs/wk, 9-5, M-F. Send resume w/social security # to JO NC7272189; Job Service, 700 Wade Ave., PO Box 27227, Raleigh, NC 27611.

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- **Systems Administrators**
- **Systems Programmers**
- **Project Leaders/Managers**
- **Computer Operators**
- **LAN Support Specialists**
- **Disaster Recovery Analysts**
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Send resume with salary requirement to: **Human Resources Dept. CW, Automatic Data Processing, Inc., MS #248, One ADP Blvd., Roseland, NJ 07068. Fax: 201/535-3834. Visit our website: www.adp.com** ADP believes that diversity leads to strength. We are an affirmative action/equal opportunity employer. M/F/D/V.

ADP

* March 3, 1997 Edition

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Software Engineer Responsible for the design, development, testing, & implementation of various software design & development projects using client-server architecture. Must use Oracle 7.0/7.1 RDBMS, SQL*Forms 4.0/4.5, SQL*Reportwriter 2.0/2.5, Oracle Graphics, PL/SQL, Powerbuilder & Visual C++ in Unix, MS-DOS & MS-Windows operating systems. Min Requirements: Bach. Degree in Elctrcl Engnrng, or Math, or Computer Sc., or related field, & 2 yrs in job offered OR 2 yrs related occupation exp as Software Engineer, or Programmer, or Systems Analyst, or Consultant or related field. Related occ. exp. must include a min. of 1 year exp in the design, development, testing, & implementation of applications using client-server architecture in Oracle, 7.0/7.1 RDBMS, SQL*Forms 4.0/4.5, SQL*Reportwriter 2.0/2.5, Oracle Graphics, PL/SQL, Powerbuilder & Visual C++ in Unix, MS-DOS & MS-Windows operating systems. $80,000/yr, 8am-5pm, 40 hrs/wk, M-F. Applicants should respond to Case #71255, PO Box 8968, Boston, MA 02114. Applicants should submit two copies of his/her resume in response.

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Kaufman Supply, a 35 year old leading southeastern wholesale distributor of housing supplies, seeks 2 programmers to design & modify Lawson reports, interfaces & on-line programs for small corporate IS department located in Atlanta.

LAWSON PROGRAMMER experienced in Lawson Software 4GL and CASE programming to fine-tune Lawson Insight programs to better meet unique business needs.

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Programmer Analyst to analyze customer business requirements. Design & develop applications to implement carriers' functionality across the application, module design & definition, forms & report generation through CASE, customization of forms, software development, design & develop Help system, quality assurance, acceptance testing & implementation; Reqs. Bach. in Comp. Sci., Computer, Electrical or Electronic Engg., Systems Analysis, Comp. Info. Systems, Mathematics or Physics., 1 yr. exp. in job offered or 1 yr. related exp. such as Sftware Engr. or Analyst Programmer; $49/K, 40 hrs/wk 8a-5p. Must be willing to relocate at employer's expense. Apply at Texas Workforce Commission, Houston, TX or send resume to 1117 Trinity, Room 424T, Austin, TX 78701. JO# TX7857480 "Ad Paid by Equal Opportunity Employer"

VAX/VMS Programmer/Analyst Needed: 40 hrs. p/wk, 8:30-5:00 M-Fri. Duties: Design and implements database applications on VAX/VMS system. Defines project technical specifications. Programs in COBOL and DCL to create applications, parametric data conversion and systems migration. Programs in RDB to manipulate data in database. Produces screen and forms design. Conducts training sessions with users of technical and business level. Requires: Bachelors in Electrical Engineering to C. Sci. and 2 years in the job offered. Must have proof of legal authority to work permanently in the U.S. Send Resumes to: IDES, 401 S. State St., 7 North, Chicago, IL 60605. Attn: Brenda Kelly, Ref# V-IL 19949-K. An Employer Paid Ad. No Calls - Send 2 Copies of both resume & cover letter

Software Support Engineer (Mem. of Scientific Staff) to analyze and resolve global software, field problems for digital multiplex system-mobile telephone exchange, provide fixes in the form of patches, isolate problems in communication protocols, networking, radio communications, such as code division multiple access, mobile firmware, antennas, universal dialing plans, call processing flow and Motorola and microprocessors, and resolve on site or in a captive office. Locate flaw in software, generate and test, debug and put resolution in the current design stream. Will analyze real-time applications in a very condensed time frame. Requirements: M.S. in Computer Science or Electrical Engineering or B.S. in Electrical Engineering or Computer Science and 2 years of software design experience in include high level programming language (C, C++ or Pascal), radio frequency engineering, radio communication, microprocessor technology, operating systems such as UNIX, & analyzing real time application software. 40 hrs/wk. Salary $44,000/yr. Applicants apply at the Texas Workforce Commission, Dallas, Texas, or send resume to the Texas Workforce Commission 1117 Trinity, Room 424T Austin, Texas 78701. Job Order #TX7857698. Ad Paid by an Equal Opportunity Employer

Programmer Analyst. Performance of business applications programming & relational database design in COBOL & C languages using SQL & Shell programming techniques under ORACLE database. 2 yrs exp in job. 40 hrs wk , $47,000/ yr Send resume to: Ms. J. Gaston, Division of Employment Security, PO Box 339, Florissant, MO 63032. Refer to Job Number 511821

Software Engineer. Creates, develops, enhances, customizes and modifies a software system installed to a VAX/VMS operating systems using VAX Rdb to control and monitor manufacturing of products, process orders, and track inventory of raw and finished goods. Creates and develops technical specifications for customization including modification of modules into entire software package to insure proper integration using DECforms for front end design. Performs system testing of modified and new function modules to insure processing performance and data acquisition using C language for batch processing WIN Loss software module management utilization in control, build, and develop appropriate software modules including use of Visual Basic to be used an graphic user interfaces. Requires Master's degree in Software Engineering, Computer Science, or Computer Science and Engineering. Also requires two years experience in the job to be performed. Job Location: Waukegan, IL. Please send resume to: Mr. Vydyanath Shivapuja, InfoWeb Systems, Inc 3435 Asbury Road, Suite 150, Dubuque, IA 52002. No calls.

RES&ABCH & DEV&LDP-MENT ENGINEER: Conducts research and development of computer systems, parts, and technology to test, detect, and evaluate performances of mainboard, video cards, hard drive, CD ROM, sound card, multimedia systems. Designs and develops computer programs to debug and modify particular foundation mainboard and related parts or eliminate problems in hardware and software. Prepares research and development reports and makes recommendations to technical support for hardware and software installation and operation of computer systems such as MS Windows, Windows 95 OS/2, Wiewrd, Fax/Modem, Windows for Work Group, Novell, and Windows NT, and to manufacturers in China, Taiwan, Hong Kong to improve quality of computer system components. Requires Master of Science degree in Computer Science, plus 2 years experience in the job offered or 2 years experience as Computer System Engineer. $42,000/year 40 hrs/wk. Apply at Texas Workforce Commission, Houston, Texas or send resume to 1117 Trinity, Room 424T, Austin, Texas 78701, J.O. #TX7858142. Ad Paid By An Equal Opportunity Employer.

Software Consultant: Design & develop business applications & systems for clients; develop purchasing & receiving systems using RPG/400, CL/400 & AS/400; integrate modules into existing purchasing & receiving system; design & develop blanket purchase order entry programs & purchase order faxing programs using SEU, SDA, Extermint, DFU & Query/400, carrying out enhancements for long-term operating plans; make modifications & integrate modules with sales orders processing systems using SEU, SDA, DFU, SQL & RUMBA/400; implement modules to support customer orders & shipping schedules & write programs with RPGIII, CL/400 & AS/400; test, debug & provide technical support in users. $56,000/yr. 40 hrs/wk. B.S or foreign equivalent in Computer Sc., or Mathematics, or Computer Eng., or Mathematics & Computer Sc. 2 yrs. exp. req'd in job offered or 2 yrs. related exp. as Systems Analyst or Consultant. 2 yrs. exp. must include use of AS/400, RPG/400, CL/400, QUERY/400, RUMBA/400, SEU, SDA, Extermint, RPGIII & SQL. Send 2 copies of resume & cover letter to the IL Dept. of Employment Security, 401 South State St., 7 North, Chicago, IL 60605 ATTN: Dennis Jones. Reference #V-IL 16901-D. No Calls. An Employer Paid Ad. Must have proof of legal authority to work permanently in the U.S.

Database & Systems Administrator. Develop & administer client/server MS Access databases & MS software applications under MS Windows operating syst. Analyze user needs & develop and/or recommend appropriate software application. Determine architecture of databases, levels of user access, & database structure parameters. Install & configure MS Office Pro-Shell (Word, Excel, Schedule+, Power Point) & MSExchange (Mail, Fax, Internet Access). Analyze & make recommendations for modification of software applications. Upgrade & customize existing databases to fit user needs. Write Macros for Word & Excel to automate routine tasks & enhance software performance utilizing WordBasic & VisualBasic program. Req: Precise location of database, special requirements, & access mode. Write documentation for all in-house applications to ensure consistency & security of system. Administer office communication system, including e-mail, & monitor performance. Train company users in MS Office applications & operating systems. Troubleshoot software problems, provide technical support, & answer user questions. Reqmnts: M.S. in E.E./Comp.Sci. 4 yrs. exp. to job offered. Must have completed graduate coursework in: data structure & programming techniques & use of databases. 40 hrs/wk (M-F, 8:00am-5:00pm) $38,500/yr. Must have proof of legal authority to work permanently in the U.S. Chgo. North Suburb. Qualified applicants, send 2 copies of resume, diploma, transcript & cover letter to: IL Dept. of Employment Security, 401 S. State St. - 7 N., Chicago, IL 60605. Attn: S. Lindsey. Ref #V-IL 17200-L. No calls. An employer paid ad.

Systems Analyst: Design, development, prototyping and construction of advanced Sybase database applications for client/server technology in Windows NT environments, using PowerBuilder and ERWIN. Consults with end-user staff and analyzes how a business application can solve the business problem at hand. Designs software applications, modules to enhancements, produces computer code, unit and system tests the software, and moves the application into a production environment. Requires a BS in Computer Science, and one year experience as a systems analyst or analyst/programmer. Experience must include one year in client server applications and database administration. Must have six months experience in PowerBuilder, Sybase, ERWIN and the Windows NT operating system. Must have a CPD (Certified Power Builder Developer) certificate. Mundelein, IL. 40hr wk, 8-5, $53,000/yr. Send two copies of resume and cover letter to Illinois Department of Employment Security, 401 South State Street - 7 North, Chicago, Illinois 60605 Attn. Jack Schaffer, Ref #V-IL 17024-H. No CALLS. Must have proof of legal authority to work permanently in the U.S. An employer paid ad.

Design Engineer - Design & develop manufacturing control programs using Karel, ANIL, & Ladder Logic. Create programs using Control Views to implement computer integrated manufacturing process. Create data flow diagrams using Erwin. Design software using Visual Basic & MS Access. Assist client to understanding programs & provide technical support. M-F, 40hrs, overtime varies. 8:30-5, $50,000/yr. Requirements: - Bachelor's degree in electrical engineering or computer science and one year's experience to the job offered or one year's experience in the related occupation of computer programmer analyst. Special requirements - At least one year's work experience with: Visual Basic, Karel, ANIL, & Control Views Must have proof of legal authority to work permanently in the U.S. Send 2 copies of both resume & cover letter to: Illinois Department of Employment Security 401 S. State St., 7 North Chicago, IL 60605. Att: Brenda Kelly, Ref # V-IL 17751-K. No calls. An employer paid ad.

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We are seeking an articulate, driven team player to develop and maintain relationships with software consultants, conduct telephone and in-person interviews to assess consultants' skills and interests, and match consultants with appropriate job opportunities working with them throughout the interview and placement process. Candidate must have 1 year of industry and/or corporate recruiting experience, proficiency with the Internet and creative recruiting techniques, and strong written/verbal communication skills. Communication abilities and professionalism are more important than technical savvy. **Job Code: TR**

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We offer extremely attractive ***TAX-FREE*** *salaries with expat/repat tickets, housing & car allowance, medical insurance, paid vacation leave.*

MAINFRAME Professionals:
To design, develop and support computer applications systems. Candidates should have experience in some of the following areas: DB2, COBOL II, IMS DB/DC, TELON, PL1, CICS, SVL, MFS, BAS, MVP/ADV, SAP-ABAP/4, H-314, Client-Server Applications, Tuxedo Tools, Endevor.

SYSTEMS ADMINISTRATION/ DATABASE ADMINISTRATION/ APPLICATION DEVELOPERS:
To design, develop and enchance applications in a Client-Server environment. Candidates with exp. one or some of the following areas: UNIX, POWERBUILDER, ORACLE, PL/SQL, MIBSQL, IMS, Visual Basic, Access GUI, OOA/OOD, SVR/Solaris, Ultrix, LOTUS Notes, MS SNA, MSWindows, C PERL, Netware, Shell, Sendmail, Win95, ASE/SPX, MP-MS/MSNP, CORBA, BSS, PowerTool, SYBIs, SPX/IPX.

SYSTEMS PROGRAMMERS:
With at least 5 years experience installing & tuning MVS/ESA Environment. Knowledge in some of the following: VTAM/NC, Roskion, Parallel Sysplex, SMP, IMM, RCS, SPCS, MICS & CA-ACF2 products.

LAN/WAN SPECIALISTS:
With at least 3 - 5 years experience in engineering, planning & design corporate data communications networks in some of the following: Windows NT, Global Systems, MS Exchange, ATM Internet/Intranet, HTML, Cisco Routers, Bay Networks, HPOpenview, Novell, WWW & Gateway Servers, FCP/IP, Token Ring.

CABLING ENGINEERS:
With at least 5 or 8 years experience in planning & design telecommunications for both Microwave and Fiber Optic Systems. Exp. in Project Management, PDH/SDH Installations, SDH implementation and Telephone switching.

Please send to preferably FAX your complete resume to:
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Fax: (966) 3 - 894-6832. Email: carlos@bintelco.com.sb

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Software Engineer: Design and develop server and systems related programs for UNIX platforms. Demonstrated ability with UNIX IPCs, processes, synchronization, file system, memory managers, networking and security. One year experience with UNIX network programming with TCP/IP sockets or Netware IPX/SPX. Demonstrated ability with UNIX development tools and technologies such as C or C++ compilers, SPARC Works Software, Deamtime, or Purify tools; SCCS, rcs, ClearCase, X Windows, Motif. Demonstrated ability developing multi-threaded UNIX applications. Demonstrated ability in cross platform software development as UNIX platforms such as SUN, HP 9000, IBM RS 6000, SCO. $63,000/yr 40 hrs/wk 9 a.m. - 5 p.m. Must have 2 yrs exp. and B.S. Comp. Eng. rel. field/equiv. Send 2 resumes: Case #71267, P.O. Box 8968, Boston, MA 02114.

SOFTWARE ENGINEER: Developing DB2, CICS and COBOL programs using DB2, CICS, COBOL, MF COBOL and XDB. Developing CSP programs using CSP/2AD, CSP/370 and CSP TURBO. Experience in using XPEDITOR or debugging DB2, CICS, COBOL online programs and batch programs. Extensive knowledge in using ASF, OFFICE VISION/370 in developing forms for CSP applications. Proven ability in using tools like File-Aid, QMF, TSO, JCL, REXX, and SPUFI. The job duties are: System study, Design, developing and testing of the systems developed. Requires Bachelors in Computer science with two years and six months experience in software development. 40 hours per week at $65,000/- per year. Please send resume to Case# 71161, PO Box# 8968, Boston, MA 02114

Director Technology

Direct technology development for major Tennessee corporation. Position requires extensive knowledge of O-O and client server technology. B.S. computer science plus experience or 3rd party consultant preferred. Familiarity with Lotus Notes, Internet/Internet, PeopleSoft, NT, Oracle, Visualbasic helpful. Excellent compensation/benefits and relocation plan. Please e-mail resume & compensation requirements to:

kwkc@mindspring.com

Applications Engineer, Computer (Hanover, MD) to design, develop, maintain & support automotive applications such as Detection, tire envelope & quick animation of suspensions (front & rear) for different car & truck programs on SDRC's I-DEAS engineering design software, program in C, C++ on Unix environment & GUI development using Motif; develop algorithms for surface generation. Must have Master's in Comp. Sci. or Comp. or Mech. Engg., 1 yr exp in job offered or 1 yr related exp such as S/ware Engr or Research Assist. Of the 1 yr req'd exp must have 6 mos exp or graduate thesis or paper working on Computer Aided of Mechanics & using SDRC I-DEAS design s/ware & the development of applications in C. $25.34/hr, 40 hrs/wk, $38/hr OT. OT as reqd. Mail 2 copies of resume & copy of ad to Dept. Of Labor, Licensing & Regulation, 1100 N. Eutaw St., Room 212, Baltimore, MD 21201, J.O. #9678857

Analyst/Programmer (Boston, MA) Consult w/multidivisional corp. clients to ascertain info. processing rqmts & design new systems & software appls to meet rqmts. Responsible for several projects from funct'l rqmts stage through to design, implementation, testing & final delivery of proj. tools, writing funct'l & detailed design specifications, responsible for training staff or use of various comp. softwares & info systems, responsible for defining prgrng standards. Tech. employed will incl PL/1 & DB2 under a MVS environment. Req Bachelors in Comp. Sci. + 2yrs exp in job offered. 40 hrs/wk, 8a-5p. $48,995/yr. Send resume in dupl to Case#71256, PO Box 8968, Boston, MA 02114.

Programmer/Analyst (DOT 030.162-014, Greensboro, NC & other client sites) Analyze user reqmnts, design, develop, re-engineer & integrate mainframe applications into client/server architecture. Design & develop user friendly Graphic User Interface (GUI) screens, provide technical support to and users. Environment: IBM 3090; COBOL/ COBOL II, DB2; CICS, JCL; VSAM, Expediter; PowerBuilder 5/5 to Comp. Sci/Math/ Engg + 2 yrs exp; $60K/yr, 40 hrs/wk, 8-5. Send resume w/social security # to JO #NC4071165, Job Service, 2006B S. Elm-Eugene St., Greensboro, NC 27406.

Software Development Engineer to design develop and test core MATLAB language technology. Serve as team member involved in applications design using C and MATLAB in UNIX, PC and Macintosh environment. Perform design testing to debug and modify coding errors and defects in software. Enhance product performance using third party performance and memory management tools. Contribute to the re-engineering of MATLAB architecture. Requires Bachelor of Science Degree in Electrical Engineering or Computer Science and two (2) years experience in Job Offered OR two (2) years experience in the design or testing of interpreter-based software languages (4GL). Candidate's 2 years experience must include at least 1 year in each of the following: developing code in C and testing in a multiplatform environment including Unix, Macintosh, and PC, programming using MATLAB; and using third party performance and memory management development tools (experience may be gained concurrently). Salary: $50,000/yr. Mon-Fri, 9:00AM-5:00PM. Send resumes to Case Number 70813, PO Box 8968, Boston, MA 02114. EOE. Applicants must be U.S. workers eligible to accept employment in the United States on a full-time basis.

Sr. Client/Server Analyst: 40 hr/wk, 9-5, $41,000/yr. Design & implement relational databases, graphical user interfaces & outputs for client projects. Use client/server tech. implemented under Software Development Life Cycle methodologies (classical full life cycle, Joint Application Development (JAD) & Rapid Applic Development (RAD)). Evaluate user requests for new or modified programs, including financial, human res mgmt, clinical research systems, statistical tracking & gen business tracking. Perform tech sales support providing tech expertise in customer meetings & presentations w/ and product consisting of proposal development & price quotations. Serve as project leader in small engagem'ts providing tech guidance to jr lvl resources. BS in Computer Sci req'd. 2 yrs exp as client/server analyst req'd. 2 yrs applic client/server analyst exp must include Microsoft Visual Basic and Omnis 7. Will supervise 5. Please resp/submit resume to Ms. Joan Lang, Mgr. Office of Employment Security, 320 Biltmar Drive, Pittsburgh, PA 15205 referencing Job Order 9073744.

PROJECT ENGINEER, SOFTWARE DESIGN: Directs, coordinates and participates on team of software engineers assigned to design, develop and implement message oriented middleware products for commercial sale. Must have MS or equivalent in Electrical or Electronic Engineering, plus two years experience in job offered. $95,000.00/year, 40 hours/week. Send resume to: FDLES Bureau of Operations, 1320 Executive Center Dr., Suite 110, Tallahassee, Florida 32399-0657. Re: Job Order No. FL-1660785.

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7:00am	8:00am	Registration and continental breakfast
8:00am	9:00am	Peter de Jager, presents *"Year 2000 Computer Date Crisis"*
9:00am	9:15am	Break
9:15am	10:00am	Jim Olivero, presents *"SoftFactory/2000: A Unique Approach"*
10:00am	10:30am	Q & A

Seminar Locations

☐ Thursday, Sept. 25th — Hyatt Regency O'Hare, Rosemont, IL
☐ Friday, Sept. 26th — McLean Hilton, McLean, VA
☐ Monday, Sept. 29th — Conrad Plaza, Toronto, Ontario, Canada
☐ Tuesday, Sept. 30th — LA Airport Marriott, Los Angeles, CA
☐ Friday, Oct. 3rd — Sheraton Tower, Boston, MA

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JOB# CW 9/22-A

IDMS DATABASE ADMINISTRATOR
Design logical/physical databases using industry standard techniques. Provide database support and system coverage, performance and tuning, and technical interface with development organizations. Extremely strong IDMS internals knowledge required. JOB# CW 9/22-B.

UNIX SYSTEM PROGRAMMER
Design, code, implement and maintain software products in a client/server environment utilizing C++ and JAVA.
JOB# CW 9/22-C.

WINDOWS/C++ JAVA PROGRAMMER
Design, code, implement and deliver client/server products on a Microsoft Windows and JAVA Web Server Platform using Visual C/C++, JAVA, DCOM, and CORBA.
JOB# CW 9/22-D.

MVS DEVELOPMENT
Design, code, implement and maintain software products in an MVS environment utilizing either COBOL or Assembler. IDMS knowledge a plus. JOB# CW 9/22-E.

TPF DEVELOPMENT
Design, code, implement and maintain software products in a TPF environment. Knowledge of ISO C would be an advantage.
JOB# CW 9/22-F.

SYSTEM ANALYST/ FUNCTIONAL EXPERT
Develop and maintain software in a multi-platform environment. Work with Marketing counterparts to develop requirements. Use standard tool suite for planning and monitoring efforts. Develop and execute test plans. Strong background in MVS and/or TPF advantageous. JOB# CW 9/22-G.

OPEN SYSTEMS DEVELOPMENT
System developer to design, code, test and support information components for the 2 open system server products. Strong C/C++, JAVA, and knowledge of CORBA, along with TUXEDO middleware components with TCP/IP, IIOP, HTTP, SSL, and SNMP required.
JOB# CW 9/22-H.

TPF COVERAGE
Troubleshoot operational problems on large loosely and tightly coupled TPF complexes. Strong knowledge of system programming needed. Requires shift work.
JOB# CW 9/22-I.

RESEARCH ANALYST - HELP DESK
Second level support to identify, troubleshoot, and resolve user software problems involving our entire system - Apollo, Galileo, and associated Internet products. Apollo user background, strong PC skills and functional knowledge of the Internet required. JOB# CW 9/22-J.

TPF SYSTEMS
Maintain currency in systems by implementing TPF control programs and system enhancement that are required to support our development and business operations. Experienced TPF systems background with above average Assembler and ISO C skill needed.
JOB# CW 9/22-K.

SYSTEMS TOOL DESIGN
Help create and implement a new development environment for TPF based on the workstation. Utilize Windows and other PC products and in-house PC programs written in C, C++ or JAVA. Also requires in-depth knowledge of the ISO C implementation of TPF. JOB# CW 9/22-L.

WEBMASTER SYSTEMS DEVELOPMENT
Assist in the development of our Internet sites into a critical part of our business process. Strong Web background with skills in HTML, scripting languages, C, C++, JAVA and Internet protocols required. JOB# CW 9/22-M.

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Apply state-of-the-art design and evaluation skills to develop desktop and Internet products. Interact and direct projects in software needs analysis, rapid prototyping, software design consulting, and full-laboratory usability testing. Graduate degree in Human Factors, Industrial Engineering and experience in software development required. JOB# CW 9/22-N.

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Programmer Analyst - (Ref # V-IL 17277-S) Plan, develop, test and document computer programs, applying knowledge of programming techniques and computer systems, evaluate user request for new or modified programs; determine feasibility cost and time required, compatibility with current system and computer capabilities; consult with user to identify current operating procedures and clarify program objectives; formulate plans outlining steps required to develop programs using structured analysis and design; convert project specifications, using flowcharts and diagrams into sequence of detailed instructions and logical steps for coding into language processable by computer. The intended responsibilities include product installation, performing suitable customization and enhancements, system development and setting up production databases using a wide variety of hardwares, softwares and languages including, but not limited to, Oracle Server, Oracle Reports, SQL*Loader, Oracle Financials Release 10, Sql*Forms, Sql*Reporter/ter and Pro*C. Reqs. 2 yrs. exp. in the job offered or in a related occupation which includes programmer, programmer analyst, systems analyst, software engineer, consultant, senior systems analyst or systems engineer. The position also reqs. a Bach. in Comp. Sci., Systems Analysis, Computer Information Systems, Computer Engg., Electrical Engg., Electronic Engg., Math or its equivalent in educ. and exp. Will accept 3 yrs. coll. educ. plus 3 yrs. exp. in the job offered or in a related occup. in lieu of the req. educ. and exp. 40 hrs/wk, 8 a.m.-5 p.m., $65,000/yr. The exp. in the job offered or related occupation must have included 6 months providing system development using Oracle Financials Release 10, Sql*Forms, Sql*Reporter/ter and Pro*C. Send two copies of both resume, & cover letter along with the ref. # to Illinois Depart. Of Employ. Sec. 401 South State St. - 7 North, Chicago, ILL 60605, Attention: Joan Sylestus. NO CALLS. Must have proof of legal authority to work permanently in the U.S.

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Computer Consultant/Programmer (Chicago). Analyze, plan, develop test and implement customized business systems software applications. In providing clients with technical solutions, utilize the following computer-based methodologies: IBM-3090, MVS, COBOL, COBOL II, VS COBOL II, VSAM, MVS/COBOL, RDBMS, such as DB2 and SYSBASE, CICS, JCL, TSP/ISPF, UNIX, C and C++. Assist in documenting developed software application. Take part in client transition to new system. Large percentage of time may be spent performing consulting services at client sites in various geographical locations. 40 hrs/wk, 8:30am-5:00pm, $43,500.00/yr. Must have a Bachelors degree in Computer Science or a related field (may include engineering, math, physics, chemistry, MIS or business) with 1 yr experience in the job offered or 1 yr as a computer software development specialist (may include programmer, systems analyst, programmer analyst or software engineer) Through education or work experience, must have acquired business system software development skills in each of the following computer-based methodologies. 1) MVS; 2) MVS/COBOL; 3) CICS, 4) JCL, 5) UNIX; 6) C 7) C++ ; 8) RDBMS such as DB2 or SYBASE. Must be willing to travel to client sites throughout the U.S. 25-50% of the time. Must have proof of legal authority to work permanently in the US. Send resume/ltr in dupl to: Illinois Dept of Employment Security, 401 South State Street - 7 North, Chicago, IL 60605, Attn: Sheila Lindsey, Ref# V-IL 17448-L, An employer paid Ad. No Calls.

Programmer Analyst - (10 Openings) [J.O.N. # 7027717] Designing, developing, testing, and documenting computer programs; using Oracle, PL/SQL and PRO*C, SQL*FORMS Reqs: 1 yr. exp. in the job offered and Bach. in Comp. Sci., Systems Analysis, Comp. Info Systems, M I S., Info. Tech., Comp. Info. Tech., Comp. Applications, Comp., Electrical, Electronic or Instrumentation Engg., Comp. Sci. Engg., Math or its foreign educ. equiv., or it's equiv in educ. and exp., Will accept 3 yrs. of college educ. plus 3 years exp. in a related occupation which included 1 yr exp. in the job offered, in lieu of the required educ. and exp. Related occupations include programmer, programmer analyst, systems analyst, systems programmer consultant, or prog. anal. consultant, systems, management information systems, information technology, computer information technology, computer applications, computer electrical, electronic, or instrumentation engineering, computer science engineering, or math 40 hrs/wk, 8a-5p, M-F, $58,000/yr. Send resume along with the J.O.N. # to: Mr. Duane M. Brentzel Manager Office of Employment Security, 500 Safe Lane, Greensburg, PA 15601

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Software Engineer: Assess business and system needs of clients and provide complete solutions, which involves complete life cycle development and maintenance of software. Design and develop UNIX based software using Oracle, Case Tools, C, PL/SQL, SQL Forms, Pro*C, OCI, SQL Reports, SQL Menu and database utilities like SQL Loader, Export, Import, Oracle Terminal Definitions. Customize, upgrade and support Oracle Financial applications. Implement enhancements/customizations on Oracle Financials. Design and develop client server software using Oracle database, Visual Basic, ODBC, Crystal Reports and PL/SQL. Design, develop and maintain Real Time Systems on Unix Operating System using network protocols such as TCP/IP and X.25. Tuning business applications and Oracle database. Full-time, 40 hrs/wk M-F, 9:00 AM-6:00 PM. $80,000/yr. Requires M.S. in Computer Science or Equiv. Degree and 3 years' exp. in the job offered or as a Programmer/Analyst, Applications Engineer or equivalent industrial designation. Experience in include: maintenance and customization of Oracle Financials, data modeling and database applications development on UNIX using Oracle database and Oracle Case Tools, SQL Forms, Pro*C, OCI, SQL Reports, database tuning; designing and developing real time systems using various network protocols, and designing and developing client server applications using Visual Basic and Oracle. Up to 100% travel required. Apply in person or send DHD resumes to Georgia Department of Labor, Job Order # GA 6134389, 2943 N. Druid Hills Road, Atlanta, GA 30329-3909 or the nearest Department of Labor Field Office.

Computer Consultant (Chicago): Analyze client automated processing procedures and problems. Design, develop, test and implement financial systems software applications to address client needs using the following hardware and software: IBM-3090, MVS/XA, VS COBOL II, CICS, DB2, VSAM, Easytrieve, ES-9000, MVS/ESA, PANVALET, VISUAL BASIC, JCL, CLIST, REXX, NDM, SAR, QMF and SPUFI. Write description of steps taken in modify computer system and procedures required to implement the new software. Train and assist end users and troubleshoot problems with new software. Travel to client sites at various geographical locations 50-75% of the time. 40 hrs/wk, 8:30am-5pm; $48,150/yr. Must have Bachelor's in Computer Science or Computer Engineering and 2 yrs exp in the job offered or 2 yrs exp as a Programmer Analyst. Must have project experience involving the designing, development, testing and implementation of financial systems software applications using: IBM 3090 or ES 9000, CICS, VSAM, Easytrieve, PANVALET, VISUAL BASIC, JCL, and CLIST or REXX. Must have completed at least one project involving the conversion of data in a RDBMS such as DB2. Must have proof of legal authority to work permanently in the US. Send resume/cv in dupl to: Illinois Dept of Employment Security, 401 South State Street - 7 North, Chicago, IL 60605. Attn: Mary Miller, Refr V-IL 16041-M. An employer paid Ad. No Calls.

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Systems Engineer/Analyst
- Formal methodology, such as Yourdon structured analysis and design, or object-oriented analysis and design
- Experience with client/server systems
- Proficient in DB2 SQL, MVS JCL, and C
- Familiarity with data modeling tools helpful

Senior Software Programmer
- 5+ years of programming skills in COBOL/COBOLII, TSO/SPF, CICS, VSAM, and DB2
- Excellent analytical and systems design skills
- Experience with billing and financial systems a plus

Senior Programmer Analyst
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Project Analyst
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Systems Engineer - client site in Andover, MA. Test, verify performance, integrity, functionality of high speed OC48 SONET network; modify software; correct errors in TCP/IP, UNIX environ., automate testing for protection switching & switch time measurements. Bachs/Comp. Sci. or Engg. Reqs. 18mos/exp. in job offered. 40hrs/wk (9-6; M-F) $50,000/yr. Send resume in dupl to: Case #71310, PO Box #8968, Boston, MA 02114.

Five Systems Analysts sought to perform variety of system design and analyses duties for the implementation and maintenance of client software applications and to lead client projects as Project Manager. Applicants must have a Bachelor degree in Computer Science, Engineering or Mathematics plus 2 years experience in the Job Offered or as a Programmer/Analyst. Such experience must include structured system analyses and design, and Project Manager experience Hours: M-F 8-5, 40 hrs/wk. Salary $49,000/yr Must be willing to travel to various client sites throughout the U.S. If interested please send two resumes to: Case # 71302, PO Box 8968, Boston, MA 02114.

Programmer/Analyst sought to work on analyses, design, development, testing, implementation, and maintenance of management information system applications in a client server environment. Responsible to modify and/or migrate applications from platform to platform and to provide technical support to end users. Requirements: Masters Degree in Computer Science or related field. One years experience in Programmer/Analyst and/or one year in client server application development in commercial environment. Education or experience must include: Sybase or Oracle, PowerBuilder or JAM or Visual Basic, SQL and Object oriented programming. Salary: $65,000/yr Hours: 40/wk. Send two resumes to Case#: 71299, PO Box 8968, Boston MA 02110.

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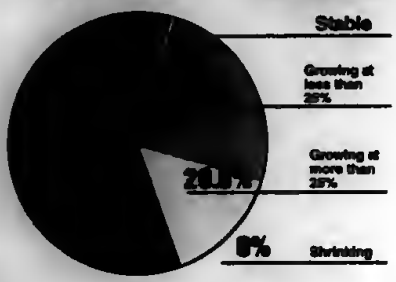
Career Survey: Public Utilities Software

Industry Hiring Trends

Overall growth rate

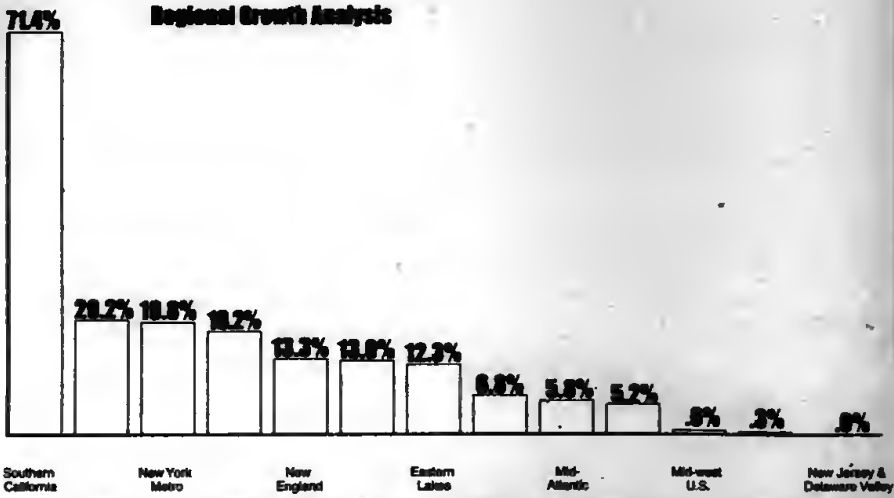


Survey Base: 53 Technology Firms Involved in Public Utilities Software

Survey conducted between December '96 and August '97.

CorpTech, a directory publisher in Woburn, Mass., tracks the U.S. 46,000 technology manufacturers. This survey relates to the 31,042 tracked firms with fewer than 1,000 employees.

Regional Growth Analysis



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New England
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The Computerworld New England Corporate Technical Recruiting Conference!

Monday, October 6, 1997
Burlington Marriott, Burlington, Massachusetts

On October 6, 1997, you have a special opportunity to update your recruiting skills and network with recruiters in your area at the third annual New England Corporate Technical Recruiting Conference, held at the Burlington Marriott, Burlington, Massachusetts.

A Full Schedule of Contemporary Topics

7:45 am **Continental Breakfast & Conference Registration**

CONCURRENT SESSIONS:

Marketing IT Careers: What Works, What Doesn't & Why
Rich Moonblatt & Christine Barron, Bernard Hodes Advertising

Immigration Update
Harry J. Joe, Esquire, Jenkens & Gilchrist

Year 2000 Recruiting Issues
David Sears, President, D.L. Sears & Associates, Inc.

GENERAL SESSION:

Behavioral Interviewing Techniques
Dr. Paul C. Green, CEO, Behavioral Technology, Inc.

12:30 pm Luncheon Keynote:
Paul Gillin, Editor, Computerworld

TOWN HALL FORUM
Jack Erdlen, Vice President, Romac International/Strategic Outsourcing

CONCURRENT SESSIONS:

Marketing IT Careers: What Works, What Doesn't & Why
Rich Moonblatt & Christina Barron, Bernard Hodes Advertising

Immigration Update
Harry J. Joe, Esquire, Jenkens & Gilchrist

Year 2000 Recruiting Issues
David Sears, President, D.L. Sears & Associates, Inc.

5:30 pm Program Ends

Selected sessions include:

Luncheon Keynote Address
Paul Gillin, Editor, Computerworld

Paul Gillin, one of the industry's leading watchers of the Information Systems profession, will giva you an up-to-the-minute view in this very special keynote address.

Marketing IT Careers: What Works, What Doesn't & Why
Rich Moonblatt & Christina Barron, Bernard Hodes Advertising

In this session, merketing experts will walk you through the various resources eveil-able in today's market end how you cen epply them for meximum impact. You'll learn what pieces to assemble in your merketing mix starting tomorrow!

Behavioral Interviewing Techniques
Dr. Paul C. Green, CEO, Behavioral Technology, Inc.

Behavioral Interviewing is e structured interview process that helps you better aveluate candidate skills and improva the match between people end jobs. In this session, you'll learn about the critical staps in this process from one of the industry's leading interview experts.

Town Hall Forum
Jack Erdlen, Vice President, Romac International/Strategic Outsourcing

In this session, you'll not only be able to propose your specific questions for open discussion, you'll learn of reel world issues end solutions from your peers. You won't want to miss this rare opportunity es Jack Erdlen end Lou Rubino, experts in the HR field, teed us through this modern discussion of your recruiting topics.

Any cancellations received after September 19,1997 will be billed for the full amount. There are no refunds for "no shows." Substitutions are permissible and should be made in writing prior to September 19, 1997.

For more information, call the conference hotline:
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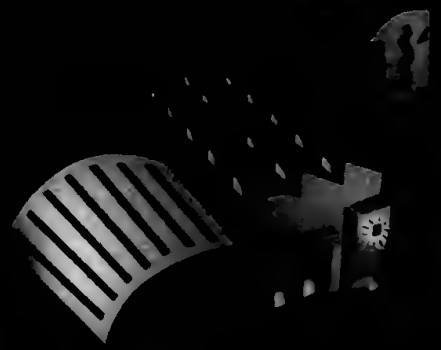

FREE Year 2000 Forum

Seminar Agenda

7:00am - 8:00am	Registration and continental breakfast
8:00am - 9:00am	Peter de Jager, presents *"Year 2000 Computer Date Crisis"*
9:00am - 9:15am	Break
9:15am - 10:00am	Jim Olivero, presents *"SoftFactory/2000: A Unique Approach"*
10:00am - 10:30am	Q & A

Seminar Locations

☐ **Thursday, Sept. 25th**
Hyatt Regency O'Hare
Rosemont, IL

☐ **Friday, Sept. 26th**
McLean Hilton
McLean, VA

☐ **Monday, Sept. 29th**
Crowne Plaza
Toronto, Ontario
Canada

☐ **Tuesday, Sept. 30th**
LA Airport Marriott
Los Angeles, CA

☐ **Friday, Oct. 3rd**
Sheraton Towers
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For additional info or to Register for this seminar:

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The Computerworld Southern California Corporate Technical Recruiting Conference!

Monday, October 20, 1997
Sheraton Grande Hotel, Los Angeles, California

On October 20, 1997, you have a special opportunity to update your recruiting skills and network with recruiters in your area at the first annual Southern California Corporate Technical Recruiting Conference, held at the Sheraton Grande Hotel, Los Angeles, California.

A Full Schedule of Contemporary Topics

7:45am **Continental Breakfast & Conference Registration**

Concurrent Sessions:

Connecting Your Recruiting Strategy to What the I.T. Professional Needs
Sue Keever, President, The Keever Group

Immigration Update
David P. Berry, Attorney at Law, Berry, Appleman & Leiden LLP

General Session
Candidate Selection
Dr. William S. Swan, President, Swan Consultants, Inc.

12:30pm **Luncheon Keynote:**
Maryfran Johnson, Executive Editor, Computerworld

Concurrent Sessions:

Connecting Your Recruiting Strategy to What the I.T. Professional Needs
Sue Keever, President, The Keever Group

Immigration Update
David P. Berry, Attorney at Law, Berry, Appleman & Leiden LLP

Town Hall Forum
Fred S. Rodriguez, Corporate Manager of H.R., Hughes Aircraft

5:30pm **Program ends**

Selected sessions include:

Luncheon/Keynote Address

Maryfran Johnson, Executive Editor, Computerworld

Maryfran Johnson, one of the industry's leading watchers of the information Systems profession will give you an up-to-the-minute view in this very special keynote address.

Candidate Selection

Dr. William S. Swan, President, Swan Consultants, Inc.

Now - more than ever - hiring the most productive people is critical. Yet most interviews are no better than chance at predicting how a new employee will behave on the job. In these sessions, you'll learn about the skills necessary to make accurate predictions and conduct an organized selection interview.

Connecting Your Recruiting Strategy to What the IT Professional Needs

Sue Keever, President, The Keever Group

Based on findings of research conducted with five of America's most respected corporations, you'll learn what companies are looking for in today's IT and technical professional and how they are successfully targeting candidates. In addition, findings from focus groups of IT and technical professionals will uncover what candidates are looking for in an employer and how they go through the job search process.

Town Hall Forum

Fred S. Rodriguez, Corporate Manager of Human Resources, Hughes Aircraft

In this session, you'll not only be able to propose your specific questions for open discussion, you'll learn of real world issues and solutions from your peers. You won't want to miss this rare opportunity, as Fred Rodriguez, an expert in the HR field, leads us through this modern discussion of your recruiting topics.

Cancellation Policy
Cancellations must be received in writing. There is no penalty for cancellations made on or before September 19, 1997. There is a penalty of 50% of your registered rate for any cancellations made between September 20, 1997 and October 3, 1997. Any cancellations received after October 3, 1997 will be billed for the full amount. There are no refunds for "no shows." Substitutions are permissible and should be made in writing prior to October 3, 1997.

For more information, call the conference hotline:
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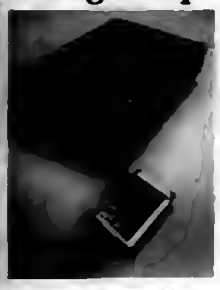
Marketplace

NEW & NOTABLE

Viking Components ships K56Flex ISA & PC card modems



Viking Components, one of the world's largest manufacturers of computer memory and modem products, is now shipping 56K ISA & PC Card Modems based on Rockwell's K56flex chipset, the industry's leading modem technology.

Responding to the overwhelming demand for faster access to the Internet, Viking's new 56K modems provide customers with the ability to log on to popular online services at speeds nearly twice as fast as 28.8 modems. All K56flex modems will receive data at speeds up to 56K bps from central-sites equipped with compatible equipment and will transmit up to 33.6Kbps, although actual speeds may vary depending on phone line conditions.

Viking's 56K ISA Modem is software upgradeable for future enhancements, and features error correction for clear and concise data transmissions. Smith Micro's QuickLink software is included, providing a complete solution for small offices requiring speaker/phone, fax and data support. Viking's 56K modem features a 5-year warranty, 24 hour/7 days a week technical support and a MSRP of $160.

Viking's 56K PC Card is compatible with both Windows and Macintosh platforms, and has a low-energy consumption rate that is important in saving notebook battery life. In addition, the 56K PC Card modems are flash upgradeable for future refinements of industry standards.

Viking's 56K PC Card ships with either QuickLink Mobile Software for PC systems, or MacComCenter Software for Macintosh systems. The PC Card supports a 5-year warranty and has a MSRP of $215.

Viking Components is a worldwide leader in the manufacturing of computer system enhancements. Viking designs and manufactures more than 1,800 memory modules, PC Cards, and 56K modems. For more information about Viking Components please call toll-free 1-888-4-VIKING, or visit Viking's special 56K Web Site at www.vikingcomponents.com/56k/.

Champion Announces Breakthrough In Autoloading of CD-Rs

On May 19, at the SIGCAT trade show in Virginia, Champion Duplicators, Inc. responds to the growing demand of CD-R duplication in announcing a new tray based duplication system – the Stellar^2.

Champion's industry experience is evident in the creation of this product and it is expected that the Stellar^2 will be the new standard in the duplication technology.

"We realize that the demand for something more efficient in CD-R duplication was rising, so we set out on a mission to achieve four things: affordability, simple operation, reliability, and scalability." President and CEO David Wolfer said of the Stellar^2 project. "We've achieved all of these things and best of all, we did it ingeniously."

Unique in concept, unprecedented in its disk loading mechanism, and unparalleled in features, the Stellar^2 utilizes a "turntable" concept-quickly and accurately moving the discs without causing noise and vibration to the writers. The machine is reliable with few moving parts and a "clean," perfected design for long-term performance reliability.

The demand for CD-R duplication is not a new one, but as demand increases, expectations also double. Before the Stellar^2 was created, duplicating CD-Rs required expensive jukebox or time consuming caddie-tested systems. These machines are reliable, however, there is a new standard of efficiency, innovation and affordability brought together in the Stellar^2. The Stellar^2 will be available in stand-alone or PC hosted systems. Although pricing has not yet been released, it is estimated to be in the range of $6,000 to $7,000 – an affordable price for advanced innovation. Champion is currently appointing distributors for the Stellar^2 product line. Contact Champion for full details at Champion Duplicators Inc., 2305 South Vasco Road, Livermore, CA 94550. Phone: (510) 373-6060 or (888) 723-3475, Fax: (510) 373-8160, or E-mail: customercare@www.championsms.com, or http://www.championsms.com.

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Fax this completed form, or all of the following information to: (800) 898-2299.

Yes, I want to enter to win a Cambridge SoundWorks® MicroWorks Speaker System. Please also enter me in the end-of-year 1997 Super Prize Sweepstakes Drawing.

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No purchase necessary. All entries must be received no later than 11:59 am (EST) Mon., Sept. 29, 1997. Winner will be determined in a random drawing on or about 5:00 pm (EST) Mon., Sept. 29. See official rules within the Careers section.

Corporate America

Corporate America has a new look these days thanks to a *Fortune* 500 PC manufacturer from South Dakota. From a two-person start-up operation in 1985 to a $5 billion global company in 1996, Gateway 2000 has taken the PC industry *and* corporate America by storm.

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OFFICIAL RULES NO PURCHASE, PAYMENT OR CONTRIBUTION NECESSARY - To enter the Sweepstakes outlined below, follow all entry instructions published at this offer. Your entry must be received by the date specified elsewhere at this offer or by 1/15/98, whichever is sooner.

Super Prize Sweepstakes: Winners will be selected at random drawings from all eligible entries received. Early Bird winners will be selected at a separate drawing from among all eligible entries. Sweepstakes begins 9/3/97. Drawings will be conducted on or about 4/30/98 by Ventura Association, Inc., an independent judging organization whose decisions are final. Drawing will be held at 1840 Avenue of the Americas, New York, NY 10018. You need not be present to win.

CONSUMER DISCLOSURE: Different sweepstakes presentations of the sweepstakes may present different prize choices. Values of a given prize level will be approximately the same. All prize winners will have the option of selecting any prize offered at level won. Number, estimated maximum retail value and odds of winning with prizes set as follows: 1 Grand Prize - $25,000 (or cash alternative of $25,000); 1 First Prize - $2,000; 1 Second Prize - $1,000; 50 Third Prizes - $80; 1,000 Fourth Prizes - $25 each; 1 Early Bird Prize - $5,000. Total prize value: $102,000.00. Custom creative presentations of the Super Prize Sweepstakes may present an Early Bird Prize. To qualify for the Early Bird Prize, if the Early Bird Prize is presented at your offer, your entry must be received by the Early Bird date specified elsewhere at this offer. Odds of winning any prize are determined by the total number of eligible entries received. Distribution of sweepstakes mail will exceed 500 million. All Super Prize Sweepstakes prizes will be awarded.

Automobile, boat/trailer prizes must be picked up at local dealer. All other merchandise prizes will be shipped to winner. Boat/trailer and/or automobile title, tags, insurance and registration fees are winner's responsibility as are any other unstated expenses not specified at the offer. Trip prizes subject to availability and must be completed within 12 months of date awarded. Accept airline at trips depend on location of winners and home of departure. Certain restrictions and blackout dates may apply. If a trip prize is won by a minor, minor must be accompanied by a parent or legal guardian. Winner's traveling companions will be required to sign a release of liability prior to departure. Trip prizes not on a space available basis and do not include personal purchases or incidentals. In substitution of prizes, except sponsor reserves the right to substitute a prize of equal or greater value in the event an advertised prize is unavailable.

For winners list (available after 6/30/98) send self-addressed, stamped envelope by 1/15/98 to: Super Prize Winners, P. O. Box 9103, Medford, NY 11763-9103.

THE FOLLOWING APPLIES TO THE SWEEPSTAKES ABOVE: No purchase, payment or contribution necessary to enter or win. No photocopied or mechanically reproduced entries will be accepted. Not responsible for incorrect mailing info, failure of computer, telephone equipment or software, inaccurate transmission of entry information or for late, lost, mutilated, damaged, incomplete, illegible or postage-due mail. All entries become the property of sponsor and none will be returned.

Winner notification will be by mail. A winner may be required to sign and return an Affidavit of Eligibility/Liability/Publicity Release within 14 days of time printed on notification or he/she will be disqualified. Any prize/prize notification returned as undeliverable will result in disqualification. If a super prize is won by a minor, it will be awarded to parent or legal guardian and the Affidavit of Eligibility and Release must be signed by the parent or legal guardian. Except where prohibited by law, winners consent to the use of their names, hometowns, likenesses and photographs for advertising and publicity without additional compensation.

Sweepstakes is open to legal residents of the U. S., Canada and Europe. In states where resale prohibited, sales taxes restricted this offer. In the event that the designated sponsors of the offer files entered, the offer may not be valid in the state, country or province to whom the offer has been transmitted. Void in Puerto Rico and where prohibited by law. All federal, state, provincial and local laws and regulations apply.

All prize values are in U. S. currency. No transfer of prize permitted. A winner is responsible for all taxes on his/her prize.

Canadian residents, in order to win, must first correctly answer a time-limited skill testing question administered by mail. Any litigation regarding the conduct and awarding of a prize in this publicity contest by a resident of the province of Quebec may be submitted to the Régie for its decision, the manner of this year. Sweepstakes may be presented in different creative presentations by different organizations. Ventura Association, Inc., 1840 Avenue of the Americas, New York, NY 10018, the independent judging organization that processes all prizes at no charge. Ventura Association, Inc., reserves the right to withdraw the promotion if it becomes technically corrupted. Employees of Sweepstakes Administrator, promoting organizations, their advertising agencies and promotional companies reserved in the promotion and their families, agents, successors and assignees are ineligible to participate in the promotion and shall not be eligible for any prizes awarded herein. The parties hereto acknowledge that SCH is not liable for any prize awards payable to promotion participants in violation of this term.

COMPUTERWORLD TECHTOYS WEEKLY SWEEPSTAKES OFFICIAL RULES: No purchase necessary. Complete official entry form or print all entry information on plain paper, including the week a prize and box to: (800)888-2288, Sweepstakes entries not eligible. Sweepstakes begins 12:01 am (EST) Monday (the date of the issue). All entries must arrive by fax no later than 11:59 am Monday of the following week. The prize draw can be found at the top of most pages of this magazine. Sponsor not responsible for telephone or fax equipment failure or delayed transmissions. All entries become sponsor's property & will not be returned.

Winner will be determined at a random drawing on or about 5:00 pm (EST) the Monday following the week's issue. You need not be present to win. The prize (and its retail value) awarded with the entry form or guaranteed to be awarded & delivered at random approx. 10 days from drawing date. If verification fails or prize is returned as undeliverable, it will be awarded to an alternate winner at random. One prize substitution except due to unavailability, in which case a prize of equal value will be awarded. Prizes not transferable or redeemable for cash. All taxes on prize are winner's responsibility. Acceptance of prize constitutes permission (except where prohibited) of our winner's name, hometown & likeness for promotional purposes without additional compensation.

Sweepstakes is open to legal US residents, 18 & older. Odds of winning determined by total number of entries received. Est. distribution: 150,000. Sponsor: Computerworld, Inc., 500 Old Connecticut Path, Framingham, MA 01701. Employees of Computerworld, Inc., its affiliates, subsidiaries, retailers, advertising & promotion agencies & immediate families of each are ineligible. All federal, court & local laws & regulations apply. Void in Puerto Rico & where prohibited by law.

For winners list (available within 4 weeks of the drawing), send a SASE to: Sweepstakes Winners, Computerworld TechnoToys Sweepstakes, 500 Old Connecticut Path, Framingham, MA 01701

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STOCK TICKER

The Week in Stocks

Gainers

PERCENT

Eggbead Discount Software(H)	35.7
Optical Data Systems Inc.	25.4
Komag Inc.	24.8
IPL Systems Inc.	24.2
Standard Microsystems Corp.	23.7
NetManage Inc.	23.2
Meridian Data Inc.	22.2
MTI Technology Corp.(H)	18.9

DOLLAR

Texas Instruments(H)	10.81
Compaq Computer Corp.(H)	9.19
Northern Telecom Ltd.	8.88
Dell Computer Corp (H)	8.00
Lattice Semiconductor	7.88
Tektronix Inc.	7.38
Amazon.com(H)	6.56
SynOpsys	5.56

Losers

PERCENT

Intelligent Electronics	-44.9
DSC Communications(H)	-11.8
Pinnacle Micro Inc.	-11.4
Symantec Corp.(H)	-9.9
Centura Software	-9.6
Yahoo! Inc.(H)	-9.2
Micron Technology	-9.0
General Datacomm Indu.(L)	-8.6

DOLLAR

Yahoo! Inc.(H)	-5.19
DSC Communications(H)	-3.81
Micron Technology	-3.75
Mc Afee Associates	-3.38
Microsoft Corp.	-2.94
America On-Line(H)	-2.81
Advanced Micro Devices	-2.69
Symantec Corp.(H)	-2.50

INDUSTRY ALMANAC

Corel draws bad hand

The recent news for Corel Corp. has been bad. First, the company canceled plans to ship a version of its WordPerfect Suite written in Java. Then it preannounced a $32 million third-quarter loss. Corel's stock (Nasdaq: COSFF) has taken a beating as it hovers at an annual low.

Reacting to the spate of negative news from the Ottawa-based maker of WordPerfect and Corel Draw, analysts recommend that investors go into a holding pattern for now. Don't buy Corel if you don't have it, and if you bought when it was healthier, don't jump off now, analysts said.

"If you've held on this long, why not just wait it out?" asked Ralph Garcea, a stock analyst at Scotia McLeod, Inc. in Toronto.

Garcea said there are hints that Corel's stock may rebound. A new version of its popular graphics program, Corel Draw 8.0, will ship next month. Another bump may come from the company's Corel World Design Content event, when the company gives away $3 million in prizes to promote its Draw program.

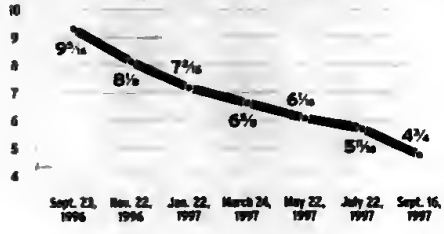
Corel is also generally stronger in the holiday season, when more people buy retail software. "Product-wise, pound for pound, it's as good as any of the other suites," Garcea said. "What's hurting them on the corporate side is credibility. 'We're doing Java,' and 'we're not.' If I'm Boeing's [information systems] department, would I back this horse? Probably not."

Garcea and analyst Martin Vallee at Tasse and Associates Ltd. in Montreal said Corel has to be more forthcoming about the third quarter, when it announced a loss of $32 million on sales of $54 million. Corel attributed the loss to an accounting practice that prevents it from booking revenue on products that have been ordered and shipped. The company is expected to disclose details of the third quarter Sept. 24.

Vallee said the stock should rebound to about $6.40 if Corel is able to push up revenue to about $96 million in the fourth quarter. — Gordon Mah Ung

COREL CREEPS DOWN

Due to an expected third-quarter loss and product changes, Corel's stock price has taken a dive



Exch	52 Wks	Range		Sale Pr Close	Wk Net Change	Wk Pct Change
COMS	81 38	28 00	3 COM Corp	67 25	1 94	3 0
AIT	71 75	51 00	AMERITECH Corp	65 50	1 56	4 1
ASND	88 5	12 06	Ascend Communications (L)	35 75	0 81	2 2
T	45 06	30 75	At & T (H)	41 81	1 06	2 5
BNYN	0 50	1 19	Bantam Systems Inc	2 38	0 19	1 3
BAY	18 03	15 16	Bay Networks Inc (H)	18 00	2 81	8 5
BEL	61 69	50 75	Bell Atlantic Corp (H)	60 69	2 75	1 5
BLS	46 81	38 13	Bellsouth Corp	46 69	1 00	0 9
BRKT	42 25	0 25	Brockhaus Technologies	13 13	0 53	4 4
CS	36 50	27 56	Cabletron Systems	34 00	1 94	6 0
CCRN	17 50	6 63	Centigram Communications (H)	17 25	6 25	1 4
CSCO	61 25	45 25	Cisco Systems Inc	71 13	1 75	2 5
CMNT	7 00	3 31	Computer Network Tech	5 19	0 00	1 1
DIGI	12 75	12 63	DSC Communications (H)	28 38	3 81	11 8
FORE	43 63	10 00	FORE Systems Inc	20 16	6 00	0 0
GDC	10 50	5 63	General Datacomm Indu (L)	9 00	0 56	8 0
GSN	51 00	38 13	General Signal Networks	42 56	2 25	5 6
GTE	49 50	36 00	GTE Corp	41 63	1 63	3 7
LU	90 75	39 00	Lucent Tech	82 75	5 00	6 4
MADGF	18 13	4 50	Madge Networks NV	6 00	0 00	0 0
MCIC	41 16	23 83	MCI Communications Corp	28 81	1 44	5 3
NETM	0 00	2 50	Netmanage Inc	4 81	0 81	21 2
NTRX	6 16	3 44	Netrix Corp	5 03	0 03	1 6
NCDI	16 25	4 63	Network Computing Devices	11 38	0 13	1 1
NWK	12 38	11 25	Network Equipment Tech	18 31	0 50	2 7
NETC	10 25	11 13	Network General	18 25	1 38	8 1
NN	59 75	26 50	Nextwave Networks Corp	59 75	5 13	9 4
NT	109 19	53 63	Northern Telecom Ltd	101 75	8 88	9 4
NOVL	10 00	6 28	Novell Inc	8 13	6 22	2 3
OCTL	11 75	11 50	Octel Communications Corp	00 0	0 11	0 4
ODSI	19 25	9 75	Optical Data Systems Inc	13 25	2 69	25 4
PCTL	17 88	8 25	Picturetel Corp	11 06	0 00	7 0
PTON	4 25	1 31	Proxicom Inc	1 72	0 00	0 0
RACO	0 38	1 50	Racotek Inc	2 25	0 18	7 1
RETI	0 25	1 16	Retix	6 16	0 25	3 8
SBC	62 25	47 00	SBC Communications	59 00	2 00	3 0
SFA	14 00	11 25	Scientific Atlanta Inc	21 81	0 11	0 0
SNVA	61 50	6 25	Silvra Corp	11 03	5 69	4 6
FON	52 75	37 50	Sprint Corp	47 56	1 94	4 2
SMSC	13 25	8 25	Standard Microsystems Corp	13 06	2 50	21 9
USW	19 44	29 13	US West Inc	50 13	2 25	6 3
XIRC	31 13	7 50	Xircom	14 13	0 25	1 9
XYLN	59 16	12 00	Xylan Corp	22 88	0 88	4 0
AAPL	19 53	12 75	Apple Computer Inc	22 00	0 10	0 5
CPQ	35 00	20 50	Compaq Computer Corp (H)	35 00	9 19	28 0
DELL	97 38	18 75	Dell Computer Corp (H)	88 50	6 00	9 0
CNE	46 25	13 38	Gateway 2000 Inc	32 38	0 25	0 8
HWP	71 50	42 50	Hewlett Packard Co	67 88	2 00	3 0
MUEI	25 50	12 63	Micron International Inc	19 50	0 34	1 8
NIPNY	24 00	13 50	NEC America	16 88	2 00	3 6
SGI	30 31	12 63	Silicon Graphics	20 56	0 63	2 2
SUNW	53 31	25 50	Sun Microsystems Inc	50 38	1 13	2 3
AMH	14 00	8 13	Ambassis Corp	12 31	0 00	0 3
DGN	37 94	12 13	Data General Corp	32 19	0 81	2 5
DEC	39 81	25 00	Digital Equipment Corp	00 M	0 75	1 8
HAM	100 44	80 13	IBM	00 25	1 88	1 9
MDCO	6 75	2 88	Meridian Data Inc	5 88	1 00	22 2
PPCM	10 13	9 00	PairGain Technologies Inc	12 25	0 38	3 0
SQNT	53 25	11 88	Sequent Computer Sys	23 13	1 34	5 5
TEXM	3 88	2 06	Sequoia Systems Inc	1 50	0 68	12 0
SBA	60 75	10 13	Stratus Computer Inc	52 50	1 88	3 7
UIS	12 13	5 75	Unisys Corp	11 19	0 31	2 7
ADBE	49 00	32 25	Adobe Systems Inc	48 00	4 25	9 5
AMSWA	14 00	4 88	American Software Inc (H)	14 00	1 75	14 3
APLX	80 00	3 13	Aplix Inc	9 75	0 13	1 3
ARSW	51 00	10 00	Ardent Software (H)	50 25	3 75	8 1
ADSX	47 00	21 00	Autodesk Inc	41 38	0 50	0 8
BGSS	92 50	21 00	BGS Systems Inc	28 00	0 63	2 2
BMCS	69 50	39 25	BMC Software Inc (H)	66 00	0 50	0 8
BOOI	95 25	16 50	Boone and Barnes (H)	00 00	0 13	0 4
BORL	10 13	4 75	Borland Int'l Inc (H)	9 00	0 88	9 9
BOBJY	80 50	6 63	Business Objects	9 19	0 11	1 5
CAIN	6 25	2 00	Cadkey Software Inc	3 00	0 88	14 3
CNTR	5 88	1 13	Centura Software	2 94	0 31	6 6
CNEPF	36 25	15 63	Checkfree Software Technologies	29 00	2 25	8 4
COGNI	36 50	21 50	Cognos Inc	34 00	0 44	1 3
CA	71 81	32 25	Computer Associates	62 31	2 63	4 0
CYN	10 38	1 50	Computervision Corp	2 19	0 19	8 1
CPWR	65 38	20 75	Compuware Corp	00 10	0 00	0 0
CSRE	18 88	8 00	Consware Inc	6 38	0 00	0 0
COSFF	9 88	4 50	Corel Corp (L)	4 97	0 09	1 8
DWTI	8 69	2 88	Datawatch Technologies Inc	3 13	0 11	3 6
FILE	36 50	9 50	Filenet Corp	16 44	0 56	3 5
INTE	47 00	7 25	Intec Software	14 25	0 88	5 8
FTPS	8 81	3 50	FTP Software Inc	5 78	0 10	5 2
MUMCF	44 25	22 00	Hummingbird Comm Ltd	42 75	1 00	2 8
HMPS	13 00	7 88	Hyperion Software Corp	10 13	0 50	5 2
IMATN	8 00	2 10	Mathsoft	2 75	0 13	4 3
MCAF	88 00	36 00	McAfee Associates	51 88	3 00	5 6
MENT	19 25	8 50	Mentor Graphics	10 50	0 81	5 3
MFGY	50 00	10 63	Micro Focus	35 50	2 88	7 2
MCAI	10 81	4 00	Microcide Inc	6 75	0 56	7 7
MSFT	150 75	65 50	Microsoft Corp	132 94	2 94	2 3
ORCL	42 19	22 50	Oracle Corp	32 69	0 81	2 1
PMTC	44 25	17 50	Parametric Technology	42 81	1 00	2 3
PARQ	9 25	0 88	Parc Place Systemsjnc	1 22	0 00	0 0
PSFT	66 38	30 63	Peoplesoft	59 63	1 50	2 0
PTEC	19 75	11 00	Phoenix Technologies	15 13	0 06	3 0
PSQL	13 75	6 50	Platinum Software	11 00	0 50	4 3
PLAT	23 00	10 25	Platinum Technology	21 00	0 19	0 8
PRGS	23 88	12 63	Progress Software Corp	20 13	0 75	3 8
RNBO	22 13	19 13	Rainbow Technologies Inc	21 88	2 63	13 8
REDB	28 00	5 00	Red Brick Systems Inc	9 13	0 06	0 7
ROSS	9 75	1 75	Ross Systems Inc	3 38	0 00	0 0
SAPE	61 00	30 00	Sapient Corp	30 25	0 11	0 3
SCOC	9 63	9 13	SCO Inc	6 50	0 00	1 0
SDTI	44 00	21 00	Security Dynamics Tech	36 25	0 25	0 7
SOTA	15 88	8 88	State of the Art	13 36	1 38	9 0
SSW	28 88	22 25	Systems Software Inc	25 88	0 13	0 5
SDRC	29 75	17 13	Struct Dynamics Research	29 63	1 13	3 8
SYBS	21 38	12 13	Symantec Inc (H)	20 06	0 25	1 2
SYMC	25 75	8 88	Symantec Corp (H)	22 88	2 50	9 9
SNPS	58 00	21 75	SynOpsys	00 00	5 56	16 1
SSAF	17 63	3 88	System Software Assoc	15 50	0 22	1 4
SYSF	00 25	7 88	Systemsoft Corp	9 25	0 00	0 0
TRUV	5 69	1 50	Truevision Corp	1 19	0 13	4 1
VITW	21 81	6 38	Vicorlogic Systems (H)	21 31	2 25	11 8
VMRK	10 88	5 50	VMark Software Inc	9 88	0 25	2 5
WALK	17 56	10 50	Walker Interactive Systems (H)	17 56	2 06	13 3
WALL	29 13	12 25	Wall Data Inc	18 13	0 13	0 7
WANG	24 06	16 00	Wang Laboratories Inc	19 91	0 78	3 8
AMZN	44 94	15 75	Amazon.com (H)	44 34	6 56	17 1
AOL	80 50	23 50	America On-Line (H)	75 31	2 81	3 9
ATHM	25 00	10 00	At Home Corp	22 50	2 50	12 5
CSPV	16 75	8 63	Computervision Corp	10 44	0 75	5 5
EDFY	24 25	8 00	Edify Corp	23 00	0 56	4 0
ICIT	29 13	5 00	Egghead Inc (H)	29 19	3 19	16 8
SEEK	11 50	4 38	Infoseek Corp	8 31	0 25	2 9
LCOS	42 00	6 13	Lycos Inc (H)	11 75	3 56	17 3
NETC	88 00	1 00	Netcom On-Line	12 94	0 56	4 3
NSCP	65 00	23 50	Netscape Comm Corp	41 00	0 50	0 3
OMKT	25 50	8 00	Open Market Inc	10 13	0 11	0 9
PSIX	14 00	5 50	PSINet	6 44	0 10	2 2
QDEB	8 88	2 00	Quarterdeck Corp	2 75	0 13	4 8
RAPT	25 75	6 00	Raptor Systems	10 13	1 61	11 0
SCUR	14 00	4 75	Security Dynamics Corp	9 00	0 75	12 2
SPYC	80 25	5 00	Spyglass Inc	10 06	1 38	15 6
YHOO	88 06	11 25	Yahoo! Inc (H)	51 50	5 19	9 2
AMD	48 50	15 13	Advanced Micro Devices	32 44	2 69	7 7
ADI	36 25	16 75	Analog Devices Inc	33 38	0 63	1 8
CHPS	80 50	7 88	Chips And Technologies	16 88	0 00	0 0
CRUS	24 25	8 00	Cirrus Logic	15 94	0 69	4 1
CY	10 88	10 00	Cypress Semiconductor Corp	15 75	0 88	5 9
CYRX	34 50	11 25	Cyrix	15 00	1 13	5 5
INTC	102 00	46 25	Intel Corp	95 44	1 63	1 7
LSCC	72 25	27 50	Lattice Semiconductor	72 25	9 88	32 2
LSI	46 88	21 38	LSI Logic Corp	24 88	0 31	1 3
MCRL	10 88	0 13	Micrel Semiconductor Inc	10 75	1 44	5 6
MU	80 06	28 88	Micron Technology	37 94	1 75	0 0
MOT	80 00	46 13	Motorola Inc	66 75	1 00	2 7
NSM	42 38	19 63	National Semiconductor	40 50	1 25	3 2
TXN	156 25	47 50	Texas Instruments (H)	135 56	10 81	8 1
VLSI	35 00	14 00	VLSI Technology (H)	34 00	2 00	6 4
XLNX	38 50	30 88	Xilinx	33 50	4 88	10 1
ZLG	49 50	16 25	Zilog Inc	24 06	0 00	0 0
ADPT	51 38	26 88	Adaptec Inc	48 75	0 81	0 6
APCC	31 50	11 75	American Power Conversion	28 88	0 44	1 6
CREAF	25 29	4 06	Creative Technology Ltd	21 50	0 63	2 8
RACE	24 50	6 00	Data Race Inc	8 75	0 69	7 7
DTM	12 50	6 75	Dataram Corp	8 88	0 13	1 4
EMC	39 63	19 75	EMC Corp (H)	39 61	4 50	8 2
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IOM	80 13	31 63	Iomega Corp	27 00	1 00	3 7
IPLS	2 25	0 94	IPL Systems Inc	2 56	0 25	24 2
KMAG	36 75	21 91	Komag Inc	21 38	4 25	24 8
MTSI	34 88	16 25	Mag An Touch Systems Inc	18 75	0 18	0 7
MTIC	11 00	1 75	MTI Technology Corp (H)	11 00	1 75	18 4
PMCI	0 75	0 59	Pinnacle Micro Inc	0 97	0 13	11 4
QMS	6 00	2 88	QMS Inc	2 88	0 00	0 0
QNTM	50 00	8 00	Quantum Corp (H)	10 75	2 69	7 5
RDUS	2 88	0 19	Radius Inc	0 59	0 06	10 0
SEG	16 25	25 88	Seagate Technology	18 50	3 25	3 3
SCIS	10 63	9 75	Storage Computer Corp	11 50	0 13	1 1
STK	54 88	32 63	Storage Technology	48 50	1 00	2 1
TEK	67 00	37 50	Tandberg Inc	67 06	7 38	12 4
WDC	16 75	88 00	Western Digital Corp	46 13	2 16	4 8
ZBR	60 00	46 63	Zebra Corp	77 25	2 13	2 8
AMSO	32 13	15 75	American Mgmt Systems	20 50	2 81	14 1
AMRY	42 00	21 88	Amistar Corp	41 75	3 00	11 8
AUD	59 06	28 56	Audio Data Processing	48 88	3 75	8 1
BDMI	88 75	16 75	BDM International Inc	24 00	0 44	1 8
CATP	88 88	29 25	Computer Tech Partners	88 75	0 25	0 7
CEN	58 13	28 00	Centigon Corp	31 25	4 13	12 5
CDO	88 88	18 38	Chartwell Inc (H)	29 56	0 63	2 2
CPU	33 75	16 25	CyberUSA Inc	32 50	0 38	1 2
CHSRF	88 88	16 25	Computer Horizons	88 50	2 63	3 7
CSC	76 50	57 88	Computer Sciences Co	71 88	2 00	2 8
FSK	49 88	14 88	Computer Task Group	45 75	0 75	1 2
CDAT	88 88	12 75	Control Data Systems Inc	88 88	0 13	0 6
EGGS	9 50	3 88	Egghead Discount Software (H)	8 50	2 88	35 7
EDS	67 38	31 25	Electronic Data Systems Corp	35 06	3 56	4 3
ICCI	48 88	18 75	Inacom Corp	25 88	0 13	0 6
INFI	88 75	7 25	Intelligent Electronics	4 63	0 61	14 0
KEA	35 06	10 75	Keane Inc	32 50	3 38	11 6
MICA	20 25	12 38	Micronics Inc (H)	88 75	0 38	1 4
PAYX	42 88	25 88	Paychex	36 13	0 19	0 5
PMS	88 63	33 38	Policy Management Sys	88 81	2 88	4 1
REY	30 63	13 25	Reynolds and Reynolds	88 31	0 88	3 3
SCBI	88 88	88 75	SCB Computer Tech Inc	58 88	0 00	0 0
SEIC	57 50	18 75	SEI Corp (H)	32 25	2 88	6 6
SMED	61 75	16 75	Shared Medical Systems	53 13	1 75	3 4
SSPE	33 50	18 88	Software Spectrum Inc	18 25	0 38	1 0
SDS	58 25	31 88	Sungard Data Systems	52 38	0 13	0 2
VSF	29 75	6 50	Vanstar Corp	13 75	0 38	2 7

KEY (H) = New annual high reached in period (L) = New annual low reached in period

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The Week in Stocks

Gainers

	PERCENT
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]

Losers

	PERCENT
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]

INDUSTRY ALMANAC

Corel draws [illegible]

The recent woes for CorelCorp. [illegible] company canceled plans [illegible] Perfect Suite software in [illegible]. $39 million third-quarter loss, [illegible] (COSFY) has taken a beating [illegible].

Reacting to the specter of negative [illegible] brand maker of WordPerfect and [illegible] word that investors go into a [illegible] buy Corel if you don't have it. [illegible] hesitation, don't jump off now.

"If you've held on this long, [illegible]," Ralph Gerson, a stock analyst at [illegible].

Gerson said it's too late [illegible] new version of its popular graphics [illegible] will ship next month. Another hoped-for [illegible] pany's Corel World Design Contest [illegible] gives away $5 million in prizes to [illegible].

Corel is also generally stronger [illegible] more people buy retail software [illegible] passed, it's as good as any of the other moves. "What's hurting them on the corporate side [illegible] doing [illegible]," and "we're not." If the [illegible] department, would I [illegible] this [illegible].

Gerson said analyst Shanthi Vellore at [illegible] Ltd. in Montreal said Corel has to be [illegible] the third quarter, when it announced a loss of $39 [illegible] sales of $54 million. Corel attributed the loss to a [illegible] practice that prevents it from booking [illegible] have been ordered and shipped. The company is [illegible] disclose details of the third quarter Sept. 24.

Vellore said the stock should rebound to about $6.50 [illegible] is able to push up revenues to about $56 million in the [illegible] quarter. — Gordon Mah Ung

COREL CREEPS DOWN

Due to an expected third-quarter loss and predicted [illegible] Corel's stock price has taken a dive

Exch	52-Week High	Low		Sept 19 Price	Wk Net Change	Wk Pct Change
COMS	91.50	28.38	3 COM Corp	47.25	1.94	3.9
AIT	71.75	52.00	AMERITECH Corp	28.38	2.56	4.1
ATNO	46.25	20.38	Ascend Communications (L)	35.75	-0.81	-2.3
T	41.00	69.75	AT & T (H)	41.81	1.00	2.5
BNYN	5.50	1.19	Banyan Systems Inc	2.38	-0.19	-7.3
BAY	38.63	15.38	Bay Networks Inc. (H)	18.00	2.81	8.0
BEL	91.38	56.75	Bell Atlantic Corp. (H)	58.69	0.75	2.5
BLS	48.81	36.11	BellSouth Corp	46.88	3.38	8.0
BRKT	12.25	5.25	Broadcast Technology	11.25	0.50	4.4
CS	28.38	27.50	Cabletron Systems	34.06	1.94	0.2
CGBM	17.50	8.63	Comptland Communications (H)	17.25	-0.25	1.4
CSCO	83.25	45.25	Cisco Systems Inc.	75.31	1.75	2.5
CMNY	7.50	5.71	Colubrier Network Tech.	5.19	-0.50	1.2
DIGI	52.75	10.63	DSC Communications (H)	28.38	5.81	-11.8
FORE	45.63	10.00	FORE Systems Inc.	28.38	3.00	0.2
GDC	12.50	5.63	General Datacomm Inds. (L)	6.00	-0.56	-8.8
GSX	53.00	56.13	General Signal Networks	42.56	2.25	0.2
GTE	49.50	28.38	GTE Corp	59.63	1.63	3.7
LU	80.75	39.00	Lucent Tech	62.75	5.50	0.2
MADGF	10.13	4.50	Madge Networks NV	5.00	0.00	0.0
MCIC	23.38	29.88	MCI Communications Corp	28.88	1.44	5.3
NETW	3.88	3.50	NetManage Inc.	4.31	0.81	25.2
NTWK	0.88	1.44	Network Corp	7.00	0.03	1.6
NCDI	19.25	6.63	Network Computing Devices	11.50	-0.11	1.1
NWK	22.38	11.25	Network Equipment Tech.	18.31	-0.38	-2.3
NETG	30.25	11.13	Network General	30.25	1.38	0.1
NN	59.75	26.50	Newbridge Networks Corp	59.75	5.11	0.2
NT	107.19	53.63	Nortel Selected Ltd.	103.75	3.88	0.2
NOVL	13.88	3.88	Novell Inc.	9.11	-0.22	-2.3
OCTL	31.75	15.50	Octel Communications Corp	18.13	0.13	0.2
OOSI	19.25	9.75	Optical Data Systems Inc.	11.25	0.88	25.4
PCTL	67.00	5.25	Picturetel Corp	11.38	-0.50	7.8
PTON	5.25	1.31	Proteon Inc.	1.12	0.00	0.0
RACD	3.88	1.56	Racotek Inc.	2.25	-0.19	7.7
RETX	8.75	5.50	Retix	5.38	-0.13	2.6
SBC	48.25	47.38	SBC Communications	50.88	2.50	0.2
SFA	24.94	13.25	Scientific Atlanta Inc.	21.81	0.13	0.2
SHVA	25.38	8.25	Shiva Corp	11.63	-0.50	4.8
FON	52.75	37.88	Sprint Corp	47.56	1.94	4.2
SMSC	15.19	9.25	Standard Microsystems Corp.	13.38	2.50	23.7
USW	39.44	29.25	U S West Inc.	30.13	3.69	0.2
XIRC	11.11	7.50	Xircom	10.13	0.25	1.9
XYLN	28.38	28.38	Xylan Corp	28.38	3.88	4.0
AAPL	29.56	12.75	Apple Computer Inc.	22.50	0.19	0.2
CPQ	75.00	26.50	Compaq Computer Corp (H)	75.00	0.19	14.0
DELL	97.38	18.75	Dell Computer Corp (H)	28.00	0.00	0.0
GTW	46.25	13.88	Gateway 2000 Inc.	32.50	-0.25	-2.3
HWP	75.50	42.50	Hewlett Packard Co.	67.69	3.00	0.2
MUEI	25.88	13.63	Micron International Inc.	19.50	0.34	0.2
NPNY	28.00	53.50	NEC America	28.38	2.00	0.2
SGI	30.31	13.88	Silicon Graphics	50.56	0.63	0.2
SUNW	53.31	25.50	Sun Microsystems Inc.	28.38	1.13	0.2
ABIM	14.00	8.13	Abrams Corp.	12.31	-0.00	-2.3
DGN	57.94	12.13	Data General Corp.	12.19	-0.81	-2.3
DEC	47.81	25.00	Digital Equipment Corp	30.44	-0.75	-1.8
IBM	109.44	60.75	IBM	98.25	1.00	1.9
MDCD	8.75	3.88	Meridian Data Inc.	3.00	1.38	22.3
PRCM	38.13	3.88	ProCom Technology, Inc.	12.25	-0.38	-3.0
SQNT	31.25	11.88	Sequent Computer Sys.	23.13	1.34	-5.5
TEXN	3.88	3.00	Sequoia Systems Inc.	3.50	0.88	12.8
SRA	68.75	18.13	Stratus Computer Inc.	52.50	1.38	3.7
UIS	12.13	8.75	Unisys Corp	11.19	-2.34	-2.3
ADBE	48.00	52.25	Adobe Systems Inc.	90.38	3.88	9.5
AMSWA	28.38	3.88	American Software Inc. (H)	14.38	1.75	84.3
APLX	46.00	3.13	Applix Inc.	6.75	0.13	1.3
ARSW	31.50	17.38	Arbor Software (H)	50.25	3.75	0.1
ADSR	47.00	31.00	Autodesk Inc.	45.50	-0.50	-2.3
BGSS	52.38	21.00	BGS Systems Inc.	28.00	-0.63	-2.2
BMCS	38.50	39.25	BMC Software Inc. (H)	50.06	0.50	0.0
BOOL	35.25	13.88	Brokat and Bavaage (H)	28.38	-0.11	-0.4
BORL	10.13	4.75	Borland Int'l Inc. (H)	9.00	0.88	9.9
BOBJY	20.50	8.00	Business Objects	9.19	-0.11	1.3
CAYN	5.25	5.50	Cayenne Software Inc.	1.38	3.88	84.3
CNTR	3.88	1.13	Centura Software	2.94	-0.11	-0.6
CHKPF	30.25	15.63	Checkpoint Software Technologies	50.38	2.25	0.2
COGNF	23.00	21.50	Cognos Inc.	34.38	0.44	1.3
CA	71.81	37.25	Computer Associates	68.31	2.50	0.0
CVN	13.88	1.94	Computervision Corp	2.19	0.11	0.1
CPWR	10.38	20.75	Compuware Corp	40.50	0.00	0.0
CSRV	13.88	3.00	Corporate Inc.	9.38	0.00	0.0
COSFF	0.00	4.50	Corel Corp (L)	4.87	0.00	1.6
DWTI	6.63	5.25	Datawave Technologies Inc.	1.13	-0.11	0.2
FILE	26.50	3.88	Filenet Corp	28.38	-0.00	-2.3
FFTE	47.00	7.25	Foote Software	14.25	-0.88	-5.8
FTPS	8.63	3.00	FTP Software Inc	1.38	0.19	5.2
HUMCF	48.25	22.00	Humanicom Comm. Ltd.	42.75	1.00	0.2
HYSW	52.50	13.00	Hyperion Software Corp	30.19	0.21	0.2
IMC	18.88	11.13	Information Resources	17.50	0.00	0.2
INGR	13.00	0.00	Informix Corp	9.44	0.03	0.7
INGR	13.00	0.00	Intergraph Corp	11.44	1.13	10.6
LSAF	8.75	0.81	Interleaf Inc.	3.38	-0.38	-2.3
ISLI	18.88	3.25	Intersolv Inc. (H)	17.19	0.11	0.7
INTU	46.25	25.88	Intuit Inc.	27.00	2.13	0.0
TLC	25.75	5.50	Learning Co. (The)	14.31	-0.56	-3.8
LGWH	0.88	4.11	Logic Works	8.90	0.75	9.2
MAPS	15.50	3.88	Mapinfo Corp.	10.13	0.00	5.2
MATH	0.00	2.19	MathSoft	2.75	-0.13	-4.5
MCAI	28.00	28.00	McAfee Associates	13.50	-3.38	-9.6
MENT	11.25	0.00	Mentor Graphics	13.50	0.50	3.9
MPGY	28.38	10.63	Micro Focus	25.50	2.50	7.2
MCAI	10.63	4.00	Microbotics Inc.	6.75	-0.56	-7.7
MSFT	130.75	35.50	Microsoft Corp	132.94	-2.50	-2.3
ORCL	42.13	22.38	Oracle Corp.	10.50	-0.81	-2.1
PMTC	28.25	27.50	Parametric Technology	49.81	1.50	2.8
PMIQ	9.25	0.00	Peter Place Systems Inc	1.50	0.00	0.2
PSFT	66.38	10.63	Peoplesoft	59.63	1.50	2.8
PTEC	19.75	11.00	Phoenix Technologies	15.13	-0.56	3.6
PSQL	13.75	3.00	Platinum Software	11.50	-0.50	-2.3
PLAT	25.00	19.25	Platinum Technology	23.00	-0.19	-0.8
PRGS	22.00	18.63	Progress Software Corp.	18.13	0.75	0.2
RNBO	22.13	10.75	Rainbow Technologies Inc.	21.98	1.00	13.6
RSDB	26.50	5.50	Red Brick Systems Inc.	9.13	0.00	0.7
ROSS	8.75	1.75	Ross Systems, Inc.	3.38	0.00	0.0
SAPE	41.38	28.00	Sapient Corp	30.25	0.11	0.2
SCOC	8.63	3.13	SCO Inc.	3.00	-0.00	-2.0
SDTI	40.38	21.00	Security Dynamics Tech.	28.00	9.25	0.7
SOVA	13.00	3.00	Shaw Inc the Art	15.38	1.00	0.0
SSW	28.88	27.25	Sterling Software Inc	25.00	0.11	0.7
SDRC	29.75	17.13	Structr Dynamics Research	19.63	1.13	2.8
SYBS	21.38	12.13	Sybase Inc (H)	20.10	-0.25	1.2
SYMC	25.75	3.88	Symantec Corp. (H)	22.88	-2.50	-9.9
SNPS	30.06	21.75	SynOpsys	40.06	5.56	16.1
SSAX	17.00	3.88	System Software Assoc.	15.50	-0.22	1.4
SYSF	20.00	7.50	Systemsoft Corp	9.75	0.00	0.0
TRUV	3.63	1.50	Truevision Corp	3.19	0.19	4.1
VIEW	21.50	3.88	ViewLogic Systems (H)	21.31	0.03	11.8
VIMR	10.88	3.00	Vimark Software Inc.	0.88	-0.25	-2.3
WALK	17.56	20.38	Walker Interactive Systems (H)	17.56	3.00	13.3
WALL	10.13	10.25	Wall Data Inc.	10.13	0.11	-0.7
WANG	28.38	28.38	Wang Laboratories Inc.	10.25	-0.78	-3.8
AMZN	44.94	15.75	Amazon.com (H)	44.94	5.38	17.1
AOL	35.56	20.38	America On-Line (H)	75.31	-2.81	-3.6
ATHM	49.50	28.63	At Home Corp	22.50	3.00	12.5
CSPN	16.75	3.63	Compuserve Corp	14.44	0.31	3.5
EDFY	28.25	3.88	Edify Corp	14.63	5.38	0.0
ICIT	09.19	5.50	Egghead, Inc. (H)	28.19	4.19	16.8
SEER	11.50	3.88	Infoseek Corp.	0.21	-0.25	-2.9
LCOS	20.38	0.11	Lycos Inc. (H)	53.75	5.38	77.3
NETC	20.38	7.00	Netcom On-Line	12.44	-0.38	-4.3
NSCP	30.38	23.50	Netscape Comm. Corp	41.00	0.88	0.2
ONET	25.38	3.88	Onsale Market Inc	14.11	-0.13	-2.3
PSIX	20.00	5.50	PSINet	0.44	-0.19	-2.3
QDEX	3.88	5.50	Quadrotrader Corp.	0.75	0.13	4.8
RAPT	25.75	3.88	Raptor Systems	11.13	1.81	11.8
SCUR	14.50	4.75	Security Computing Corp	0.88	0.75	5.2
SPYG	20.25	3.88	Spyglass Inc.	10.00	1.88	13.9
YHOO	36.06	11.29	Yahoo! Inc. (H)	51.00	-5.19	-9.2
AMD	20.38	13.13	Advanced Micro Devices	32.44	-2.69	7.7
ADI	30.25	18.75	Analog Devices Inc.	15.38	-0.63	1.8
CHPS	28.38	7.98	Chips and Technologies	10.88	0.50	0.2
CRUS	28.38	3.00	Cirrus Logic	15.94	-0.69	-4.1
CY	18.94	10.50	Cypress Semiconductor Corp.	15.75	-0.88	-2.3
CYRX	20.38	30.75	Cyrix	23.00	3.19	3.5
INTC	100.94	36.38	Intel Corp.	85.44	1.63	1.2
LSCC	72.25	27.38	Lattice Semiconductor	72.25	7.98	13.7
LSI	50.90	21.38	LSI Logic Corp	29.88	-0.31	1.9
MCRL	20.38	0.13	Micrel Semiconductor Inc.	10.71	1.44	3.9
MU	20.38	24.88	Micron Technology	37.94	-3.75	-9.0
MOT	30.50	66.13	Motorola Inc.	66.75	-1.88	-2.7
NSM	42.19	17.38	National Semiconductor	40.88	1.19	1.2
TXN	120.25	67.50	Texas Instruments (H)	133.56	10.81	8.7
VLSI	35.38	14.50	VLSI Technology (H)	20.38	3.88	6.4
XLNX	28.38	20.88	Xilinx	53.38	4.88	10.1
ZLG	29.38	28.25	Zilog Inc.	30.88	0.00	0.0
ADPT	51.38	30.38	Adaptec Inc.	46.75	-2.31	-0.9
APCC	25.50	13.75	American Power Conversion	26.63	-0.44	1.8
CREAF	39.25	4.30	Creative Technology Ltd.	21.50	-0.63	-2.3
RACE	28.06	0.00	Data Race Inc.	0.75	0.63	7.7
DTSI	52.50	3.75	Datatask Corp.	3.88	0.11	1.4
EMC	60.63	19.75	EMC Corp. (H)	50.63	4.50	0.2
EMLX	21.38	14.50	Emulex Corp	18.25	-1.50	-5.8
ESCC	31.00	20.00	Evans and Sutherland	31.00	0.75	2.5
EXBT	17.50	3.00	Exabyte	11.94	0.56	4.8
ISLF	2.33	1.38	Intelligent Intfll Systems	1.11	-0.00	-2.7
IOMI	29.13	13.88	Iomega Corp.	27.88	1.00	3.7
IPLS	2.75	0.84	IPL Systems Inc.	3.00	3.00	84.3
KMAG	10.75	15.31	Komag Inc.	21.38	5.25	84.3
MTSI	20.38	13.00	Micro Source Systems Inc.	46.25	0.19	0.2
MTRC	11.50	1.75	MTI Technology Corp (H)	11.00	1.75	18.9
PRCL	0.97	0.59	Procomp Micro Inc.	0.27	-0.13	11.4
AQM	6.38	0.00	QMS Inc.	3.88	0.00	0.0
QNTM	19.44	3.00	Quantum Corp. (H)	10.75	2.69	7.5
RDUS	3.00	0.19	Radius Inc.	2.88	3.00	90.0
SEG	30.25	25.38	Seagate Technology	36.94	1.25	2.5
SCIS	19.50	8.75	Storage Computer Corp	11.50	-0.11	1.1
STK	20.38	52.63	Storage Technology	48.56	1.88	2.1
TEII	67.00	67.50	Tecnomed Inc.	67.00	3.38	17.4
WDC	54.75	30.38	Western Digital Corp	10.13	0.00	0.0
XRA	28.38	40.69	Xerox Corp.	72.75	0.13	2.8
AMSY	37.13	15.75	American Mgmt. Systems	28.38	5.63	14.7
ANLS	23.38	51.25	Analysts Int'l.	41.75	0.00	13.8
AUD	50.44	25.56	Audio Data Processing	40.00	0.75	8.1
BDAM	10.75	19.75	BDM International Inc.	26.50	-0.44	-2.8
CATP	38.94	25.25	Cambridge Tech. Partners	36.75	-0.25	-0.7
CEN	53.13	29.50	Cendant Corp	17.25	4.13	12.5
CIDO	10.19	28.38	Cimedco Inc. (H)	29.56	0.63	2.8
CPU	33.75	10.00	CompUSA Inc.	32.94	9.38	1.2
CMRZ	45.63	28.25	Computer Horizons	26.38	0.63	1.7
CSC	26.50	37.38	Computer Sciences	15.38	0.00	2.8
TSK	29.38	28.38	Computer Task Group	19.75	0.75	1.7
CDAT	28.13	18.75	Control Data Systems Inc.	28.38	-0.13	-0.6
DCGS	0.00	3.88	Richland Discount Software (H)	0.88	0.00	35.7
EDS	33.38	34.75	Electronic Data Systems Corp	35.50	-1.56	-4.2
ICD	40.62	28.19	Icarom Corp.	35.75	0.13	0.0
INEL	10.75	0.00	Interlingual Electronics	0.88	-0.81	84.3
IEA	20.00	10.75	Exabyte Inc.	32.50	3.38	12.8
MICA	29.25	12.31	Micronics Inc. (H)	26.75	-0.38	-1.4
3DFX	42.50	25.38	Pixelvue	26.11	0.19	0.2
PSIC	04.81	13.11	Policy Management Sys.	64.81	2.68	4.3
REY	20.38	12.75	Reynolds and Reynolds	20.31	-0.69	-3.3
SCBI	30.88	10.75	SCB Computer Tech Inc.	13.88	0.50	0.0
SEIC	28.38	18.75	SEI Corp (H)	32.25	0.00	0.0
SMED	53.75	36.75	Shared Medical Systems	53.13	1.75	0.2
SSPE	28.38	28.38	Software Spectrum Inc.	18.25	-0.19	-1.0
SDS	28.25	37.50	Sungard Data Systems	52.00	0.12	0.2
VST	29.75	3.88	Vanstar Corp.	13.75	-0.38	-2.7

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PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701

SUBSCRIPTION/BACK ISSUES

Phone ..... (800) 552-4431
E-mail ..... circulation@cw.com.
Back issues ..... (508) 820-8129

REPRINTS/PERMISSIONS

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Companies in this issue

Page number refers to page on which story begins. Company names can also be searched at www.computerworld.com.

3Com Corp. 39
Aberdeen Group, Inc. 83,87,89
ABT Corp. 6,45
Acer Gateway Systems LLC 49
Actuate Software Corp. 99
Aetna America, Inc. 79
Aetna Work Opportunity 89
AGR, Inc. 35
American Online, Inc. 101
American Airlines 100
American Insurance Group 85
American Reinsurance Co. 89
American Skiing Co. 43
Ameritech Corp. 105
AMR Corp. 43,100
Apple Computer, Inc. 17,33,73
Apollo, Inc. 70
AT&T Corp. 131
Attitude Supply Co. 2
Avanade, Inc. 48
Bell Software Ltd. 14
Banco do Brasil S.A. 4
Bankbrokers Corp. 12
Banyan Systems, Inc. 81
Barnes & Noble, Inc. 49
Bassett Banks, Inc. 94
BBN Corp. 2
Bell Atlantic Corp. 48
Bell Canada 49
Best Web Consulting 110
Berkshire Blue Corp. 4
Blue Cross/Blue Shield of North Carolina 90
Boeing Co. 85
Bonn, Allen & Hamilton, Inc. 4
Borland Int'l, Inc. 3,77
Bria Technology, Inc. 99
Brookhaven Information Systems, Inc. 99
Burlington Coat Factory Warehouse Corp. 18
Business Objects, Inc. 99
CBS Marketwatch Corp., Inc. ..... Cover 1
Cabletron Systems, Inc. 8
Caldera Technology 130
Carlton Corp. 88
Casio Computer Corp. 81
Cathay Pacific Airways 48
Charles Schwab & Co. 85
Check Point Software Technologies Ltd. 49
Chemical Information Technology Co. 8
Chubb Group of Insurance Cos. 101
Cisco Systems, Inc. 8
Citicorp 49
Cognos, Inc. 98
Colonial Savings PA 89
Comcast 131
Compaq Computer Corp. 77,81
CompuServe Corp. 131
Computer Associates International, Inc. 8,28,85
Computer Network Technology Corp. 77
Confirmed Alliance 48
Cooper & Lybrand LLP 4
Corel Computer Corp. 8,106
Corning, Inc. 85
Cotton Wholesale, Inc. 77
Crossmill Partners LLC 94
Cubix Corp. 79
Current Analysis 3
Datapro Information Services Group, Inc. 98
Datapoint ..... Cover 1
Day Timer Technologies 89
Dell Computer Corp. 77
Deloitte & Touche 8
Deutsche Morgan Grenfell, Inc. 92
Diamond Technology Partners, Inc. 98
Digital Equipment Corp. 98
Dimensional Insight, Inc. 99
Dupont Canada Inc. 89
Dynacq Tire Corp. 92
DuPont Merck, Inc. 89
Earthlink 131
EDS Corp. 4
Elan Pharmaceuticals Corp. 6,8,100
Electronic Data Systems Corp. 6,8,100
Encyclopedia, Inc. 3
Exchange Applications, Inc. ..... Cover 1
Excite, Inc. 49
Fallon McElligott, Rinzler & Rubin 98
Health Care Systems 98
Federal Express Corp. ..... Cover 1
First Union Corp. ..... Cover 1
Fleetlight, Inc. 99
Floorig, Inc. 99
Ford Financial Group, Inc. ..... Cover 1,85
Forrester Research, Inc. 83,86,100
Frankenberg NICE ..... Cover 1
Gartner Group, Inc. 6,24,45,73,81,88,92,98,106,108
Gateway 2000, Inc. 81
General Electric Co. 98
Genuity Partners 8
Google Pacific Corp. 92
Hyo Information Group 45
Greenwood Trust, Inc. ..... Cover 1
Groupe Ark Pharma SA 48
GTE Corp. 8,131
GTE Internetworking 28
H&R Block 131
Hanson Corp. 48
Hard Corp. 48
Hardin Associates LLC 94
Hardin Capital Co. 92,98,100,130
Hardin Media Group, Inc. 8,28,85
Hitt ..... Cover 1,8,44,47,73,81,82,85,87,89,92,98,100
Hoffman-La Roche Inc. 89
Hyperion Solutions Corp. ..... Cover 1
Information Builders, Inc. 98
Information Builders, Inc. 77,100
Informix Corp. 8,88,100,77
Intel Corp. ..... Cover 1
International Data Corp. 10,28,88,89,92,98
Internet, Inc. 24
Interwoven 8
IT Business Letter 8
J. D. Hunt Transport Services, Inc. 8
J. D. Edwards & Co. 28
JP Software, Inc. 85
Jyoti's, Inc. ..... Cover 1,87
Kaiser Associates, Inc. ..... Cover 1
Lands' End, Inc. 98
LANQuest, Inc. 89
Lightbridge, Inc. 88
Lotus Development Corp. 6,28,85,87
Lucas Digital Films, Inc. 28
Marketscape, Inc. 8
Lotus Development Corp. 6,28,85,87
Marketscape, Inc. 8
Mastercard International 8
Mercer Management Consulting 8
Merrill Lynch & Co. 77
Microsoft Corp. ..... Cover 1,6,8,28,44,47,73,77,81,82,85,87,89,92,98,100,106,108
Microsoft Network 28
Microsoft, Inc. 77,131
Middlebrook, Inc. 98
Midwest Bankcenter Corp. 92
Midwest Bankcenter Corp. 92
MIPC Technologies 81
Motion On-Line 8
Communication Devices, Inc. 131
Motley Fool 8
Motorola, Inc. 8
Motorola Communications Corp. ..... Cover 1,8,10,11,28,85,87
Network Appliance, Inc. 77
Network Computer, Inc. 8
Network One Int'l Inc. ..... Cover 1
Network Systems Corp. 8,100
New Dimension Software Ltd. 28
New Oak Communications 8
Nike, Inc. 28,28
Novell, Inc. ..... Cover 1,28,85,87,89,92,98
Office Depot, Inc. ..... Cover 1
Oracle Corp. ..... Cover 1,8,10,11,85
Orbital Data Corp. 8
Pacific Life Ins. Co. 77
Parallan, Inc. 88
Peoplesoft, Inc. 8
Peoplesoft Ireland Group ..... Cover 1,88
PC Data, Inc. 85
PECO Energy Co. 8
Peoplesoft Medical Center ..... Cover 1
Peoplesoft, Inc. 6,28,89
Peoplesoft 8
Pepsi Systems Corp. 8
Philips Mobile Computing 81
Phoenix Corp. 110
Plan Core Systems, Inc. 99
Plow Corp. 28
Plutonium Technology, Inc. 28,89
Polyhill 49
Pony Canal Pickup, Inc. 39
Price Waterhouse LLP 4
Prism Solutions, Inc. 98
Progressive Networks, Inc. 17
Prudential Securities, Inc. 85
PSINet, Inc. 81,131
Psion U.K. PLC 81
Quadramax, Inc. 28,81
Quantumlink Corp. 85
Quarterdeck Software Corp. 84
Real Estate Tax Services, Inc. 49
Remedy Corp. 43
Rockwell International Corp. 98
RSA Data Security 98
Saltmarsh, Inc. 98
Sales Technologies Solutions 28
Sapient Technology, Inc. 99
SAP AG 4,85,77
SAP America, Inc. 28,98
Sands Mitchell, Inc. 108
Seagate Technology, Inc. 85
Sel Tel, Inc. 8
Security Dynamics Technologies, Inc. 8
Sequel Technology Corp. 8
Sequent Computer Systems, Inc. 8,77
Shubert Organization, Inc. 49
Silicon Graphics, Inc. 8
Skyblazer Corp. 84
Smithfield Foods Corporate Headquarters 6
Southwestern Bell 43
Spinnaker Corp. 8,131
Spohn, Sanders & Company 105
SRA, Inc. 77
State Street Corp. 85
Subaru of America, Inc. 88
Sun Microsystems, Inc. 4,10,85,87,130
Sunbelt, Inc. 49
Sybase, Inc. 99
Symantec Corp. 85
Symbols Corp. 81
Synopsis, Inc. 49
Tame and Associates Ltd. 108
Tamedome, Inc. 84
TeleChoice, Inc. 2
Tenfore Automotive 131
The Bean Co. 4
The Sabre Group 43,108
The Sharper Image Corp. ..... Cover 1
The Yankee Group 2
Thrifty Rent-A-Car System, Inc. 43
Telebroadcast Group, Inc. 49
Tiger Leaf Communications, Inc. 85
Tivoli Systems, Inc. 28
Toyota Motor Sales U.S.A., Inc. 43
Transamerica, Inc. 88
Trans Global Resources, Inc. 8
U.K. Sabre Corp. 28,81
Unify Corp. 43
Unison Software, Inc. 88
Unisys Corp. 28
United Airlines 43
United Companies Lending Corp. ..... Cover 1
United Parcel Service of America, Inc. 8
US Airways Group, Inc. 43
US Web Corp. 49
Valmet Technologies, Inc. 2
Valley Technology, Inc. 99
Valley Record Distributors, Inc. 77
VDO Dual Corp. 17
Verio, Inc. 49
Versant Object Technology, Inc. 49
Viewsoft, Inc. 98
Vinconet, Inc. 88
Visa International, Inc. 43
VITAware, Inc. 17
Wachovia Funds Securities 88
WebTV 131
Wells Fargo & Co. 49
Western Digital Corp. 73
WebSoft Advances 28
WorldCom, Inc. 131
Xerox Research, Inc. ..... Cover 1,49,77
Zenith Commercial Equipment ..... Cover 1
Zenith Kemper LP 20
Zenith Technology Solutions ..... Cover 1

Schmidt wins user kudos

CONTINUED FROM COVER 1

Users gave him high marks for effort and said he is doing a good, but not outstanding, job.

Schmidt won kudos for technical proficiency, shipping products on time and jump-starting Internet and intranet Java initiatives.

But he got low marks for improving the company's technical support, wooing more developers back to the IntranetWare fold, revamping an outmoded licensing strategy and providing more marketing visibility.

Novell spokespeople declined *Computerworld*'s request to interview Schmidt.

Analysts said Schmidt faces a daunting task in realigning the company and erasing the market perception that Novell is merely a legacy network operating system for file and print services.

Kristin Marks, a senior analyst at Networks Are Our Lives, a consulting firm in Sherman, Conn., that installs both NetWare and Windows NT Server networks, said many businesses regard NetWare as "their father's Buick."

"Our Fortune 500 customers see NetWare as a beloved relic of networks past, but not necessarily the foundation on which to build their next-generation corporate intranet and Internet-based networks," Marks said. "Very few of my customers are installing IntranetWare yet."

ERIC SCHMIDT'S REPORT CARD

Effort	A-
Deportment	B
Delivering products on time*	B
Java initiative	B+
Tech support	C-
Licensing	C-
Developer relations	C
Marketing	B
Overall grade	B

*With the exception of NDS for NT

Source: User interviews

Novell's share of the network operating system market has fallen from 75% in the early 1990s to 55% today, according to International Data Corp. in Framingham, Mass.

CATHY CAST

Freudenberg-NOK's Dean Johnson: "I have the sense Novell is doing better under [Schmidt's] stewardship"

Still, users are encouraged by Schmidt's moves.

"I give Schmidt a B or a B+. The new products, like BorderManager and GroupWise 5.2, are awesome, solid products that provide me with very good, integrated Web access," said Phil Easter, a technology strategist at Greyhound Lines, Inc. in Dallas.

He said he was especially pleased with Schmidt's "workmanlike" attitude and his willingness to meet with users.

Dean Johnson, a senior technical specialist at Freudenberg-NOK General Partnership in Bristol, N.H., was even more generous, giving Schmidt an A–. "I have the sense Novell is doing better under his stewardship," he said.

Earlier this year, Freudenberg-NOK opted to upgrade to IntranetWare. But Novell shouldn't mistake the firm's satisfaction with complacency.

"We still want them to deliver NDS [Novell Directory Services] on NT, which they've been promising forever, and there's still no sign of it," Johnson said. And Novell must continue to address 100% Pure Java and beef up NDS with improved replication, naming and administrative features, he said.

Novell is writing more and more of its code — particularly ManageWise — in Java. That means David Smith, network manager at C&S Wholesale Grocers, Inc. in Brattleboro, Vt., can count on standard TCP/IP at the desktop. "I'll keep buying Novell," he said.

But the kudos were tempered by several big caveats.

Keith Thibodeaux, network manager at United Companies Lending Corp. in Baton Rouge, La., said he wants to see Novell "shipping a Windows 95 client that works well."

"I keep hoping that Novell is getting its house in order, but I'm just not seeing any movement on the issues that concern me the most — especially the overall manageability of Novell Directory Services," Thibodeaux said. His grade for Schmidt: C.

Thibodeaux said NetWare's lack of a graphical management interface has resulted in United Companies spending about $30,000 for third-party management tools in the past year.

"To stay in the game, Schmidt has to make real improvements in the core NetWare/IntranetWare technologies," Thibodeaux added.

DEARTH OF THIRD PARTIES

It is for that reason users are vexed by the flagging third-party development efforts for the IntranetWare platform, which they said has been soundly eclipsed by Windows NT Server.

"Our security management package doesn't support NetWare," disclosed an IS manager at a mid-Atlantic brokerage house. So within the next six months, the brokerage will upgrade the 80% of its 3,500 users currently on NetWare to Windows NT.

George Hoffman, technology services manager at Penobscot Bay Medical Center in Rockland, Maine, said the hospital's migration from NetWare to Windows NT by early next year is dictated by the lack of specialized medical applications for the Novell environment.

"It's crucial for [Schmidt] to get developers writing for the IntranetWare platform," Hoffman said. □

Novell releases products to improve NetWare/Windows NT integration. Page 59

Novell's product pledge

Novell CEO Eric Schmidt has kept his pledge to introduce "a new set of products every month."

The latest offerings, introduced last Wednesday at a press conference in New York, are stand-alone versions of the proxy caching and authentication services bundled into BorderManager.

Introduced last month, BorderManager is an integrated suite of directory-based network services. It centrally manages, secures and accelerates Internet and intranet access.

FastCache is a stand-alone proxy server aimed at small businesses and remote offices. Due in November, it will deliver more than 4,000 active connections per second and cost about one-third the price of BorderManager. BorderManager pricing begins at $2,495 for a five-user license.

The second package is BorderManager Authentication Services, which is based on RADIUS (Remote Authentication Dial-in User Service) for NDS. It extends NDS's management and security capabilities to third-party equipment such as modems and routers. The RADIUS package is available free from Novell's World Wide Web site. The full Authentication Services package will ship early next year. Pricing hasn't been set.

Schmidt told *Computerworld* that Novell will follow up its BorderManager offerings with a new license management package and a software distribution product next month. He declined to reveal further specifics. — Laura DiDio and Kevin Fogarty

History hobbles effort to revitalize Novell

By Laura DiDio

EVAN AARON Eric Schmidt joined Novell, Inc. in April. Joe Marengi, former acting president, had begun to shift strategic gears.

Instead of implementing a cross-platform World Wide Web server strategy like many competitors, he decided Novell's long-term goal would be to deliver cross-platform services for its Novell Directory Services (NDS) and security. But the transition has been tough. In restructuring Novell, Schmidt cut 1,000 jobs and suffered successive losses in the most recent two quarters.

In the third quarter, ended July 31, Novell posted a loss of nearly $122 million, compared with net income of $58.8 million in the same period a year ago. Revenue shrank by 75% to $90 million from $365 million in the 1996 third quarter.

Much of Novell's financial woes stems from years of overstocking its distribution channel. So Novell stopped all new deliveries to the channel in the past quarter, thereby erasing about $100 million in revenue as the company bought back tens of thousands of copies of NetWare and other products.

No one in the user or analyst community faults Schmidt for the tide of red ink, but he must nonetheless get Novell back to profitability. The first step is to jump-start the sluggish sales of IntranetWare 4.11.

Jon Oltsik, an analyst at Forrester Research, Inc. in Cambridge, Mass., said that may be difficult. "Users are buying Novell for tactical, not strategic reasons. Our numbers show that only 20% of users have upgraded to NetWare 4.1, and Novell's fate hinges on the adoption of NDS," Oltsik said.

Here, at least, Novell has gotten a left-handed "gift" from Microsoft Corp.: Windows NT 5.0 with the rival Active Directory won't ship until the second half of next year.

Analysts said it also is crucial for Novell to win mind share and beef up its direct sales force. "NDS on multiple platforms is a great idea, but IBM, Sun Microsystems, Inc. and Hewlett-Packard Co. aren't selling NDS — they're just offering it. Someone needs to get those customers excited about it, and that someone has to be Novell," Oltsik said. □

Periodical postage paid at Framingham, Mass., and other mailing offices. Posted under Canadian International Publication agreement #0785697. Computerworld (ISSN 0010-4841) is published weekly, except a single combined issue for the last two weeks in December by Computerworld, Inc., 500 Old Connecticut Path, Box 9171, Framingham, Mass. 01701-9171. Copyright 1997 by Computerworld, Inc. All rights reserved. Computerworld can be purchased on microfilm and microfiche through University Microfilms Inc., 300 N. Zeeb Road, Ann Arbor, Mich. 48106. Computerworld is indexed. Back issues, if available, may be purchased from the circulation department. Photocopy rights: permission to photocopy for internal or personal use is granted by Computerworld, Inc. for libraries and other users registered with the Copyright Clearance Center (CCC), provided that the base fee of $3 per copy of the article, plus $.50 per page is paid directly to Copyright Clearance Center, 27 Congress St., Salem, Mass. 01970. Reprints (minimum 100 copies) and permission to reprint may be purchased from Michelle Oh, Computerworld Reprints, c/o Reprint Services, 315 Fifth Ave. Northwest, St. Paul, Minn. 55112, (800) 217-7874, Fax: (612) 633-1862. Requests for missing issues will be honored only if received within 60 days of issue date. Subscription rates: $3 a copy; U.S. — $48 a year; Canada — $110 a year; Central & So. America — $150 (surface) a year; Europe — $295 a year; all other countries — $295 a year. Subscriptions call toll free (800) 552-4431. POSTMASTER: Send Form 3579 (Change of Address) to Computerworld, Box 2044, Marion, Ohio 43305.

ABC ABP

COMMENTARY

Hide the Mercedes! The users are coming!

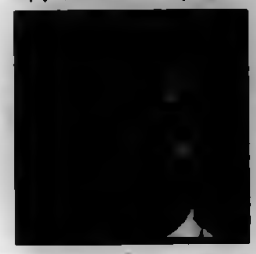
Allan E. Alter

You used to be merely disliked. Now that you're in the money, people are going to *hate* you. Thanks to the IT labor shortage, paychecks for IS professionals are growing across the board.

Computerworld's recent salary survey shows that total compensation increased an average of 10% 01 more in the past year. Compensation for systems analysts went up 15%; fo1 CIOs, 28%. In my 10 years covering IS management, I've never seen anything like it.

That's good news, but don't get smug and comfy. Once the word spreads, you'll face a public relations problem. Before, users merely held you in disdain. Now they're going to resent you. You used to be somebody to kick when the systems went down. Now you're the privileged class. You're getting raises and bonuses few others are receiving. Even the poohbahs in corporate HR are bending dress codes and other rules to keep you happy.

Who can blame users for being envious? Look at the numbers: While other workers are seeing raises, they're nowhere near those in the IS profession. Next year, other salaried employees (including executives) are expected to get raises that average 4.1% to 4.4%, according to recent surveys. The Bureau of Labor Statistics says the Employment Cost Index, which measures wages, salaries and costs for employee benefits, went up only 2.8% from June 1996 to June 1997.



Those increases look even more puny when you consider the inflation rate. It's a low 2.1%, but that leaves a real pay increase of just 2%.

There's an upside to this situation, besides what it does for your bank account. More employees will want to cross the line and join IS. That ought to help you fill entry-level jobs and positions that require ample business knowledge.

But human nature being what it is, for every employee who tries to cash in, there will be 10 who are envious. Every time their PC crashes; every time you fall behind on a project or screw up an upgrade; every time the network goes down, they'll gripe, "We pay them the big bucks for *this*?" Old lawyer jokes will get a facelift. (What do you call 100 programmers at the bottom of the ocean? A start.)

You might be able to live with the snide comments, but are you ready for the higher expectations? Never mind that the plate is overflowing with year 2000 conversions and other crucial projects. Never mind that you're scrambling to fill your openings. If you're being paid more, your customers will expect you to build more systems, juggle more projects, contribute more to the business, show more professionalism. They'll expect you to *earn* that salary.

Metric-minded managers will try to calculate the return from the investment in higher IS salaries.

Productivity (the ratio of value created to the cost of producing it) will decline if IS labor costs increase while IS output remains the same. And those nagging, ignorant calls for outsourcing will get more insistent if you don't meet those managers' standards — ill-defined as they may be. "We're paying more, and what have we got to show for it?" they'll say. "Why don't we outsource and cut our costs?"

Unfortunately, there's not much you can do. You can't confront people directly. What can you do during an argument with a user, ask "Are you jealous of me?"

Even if you sat down and rationally explained the laws of supply and demand, it wouldn't register emotionally. All you can really do when resentment builds is stay busy and look sharp.

So enjoy that Volvo station wagon or that Beemer. Splurge on a weekend getaway or season tickets. Just don't flaunt it. □

Alter is Computerworld's senior editor, Managing. His Internet address is allan@alter@cw.com.

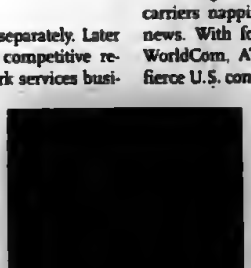
Networks and content part company

David Moschella

From a corporate user's point of view, the real story behind the complex transactions between America Online, CompuServe owner H&R Block and WorldCom is that the telcos are clearly taking over the Internet backbone business.

First, MFS bought UUnet Technologies, only to be acquired by WorldCom. Then GTE decided to pick up BBN. Now, CompuServe and AOL are getting out of the transport business, as AOL positions itself as a content and media company with an audience of 12 million viewers. Meanwhile, the remaining major independent Internet service providers (Netcom, PSINet and EarthLink) remain mired in red ink. It's hard to imagine they won't be the next acquisition targets.

None of this is surprising. In October 1996, I wrote a column predicting that the major carriers would inevitably dominate the backbone industry because the telcos owned so much of the capacity and because of brutal price competition. In June, I argued that network transmission and content services were such fundamentally different businesses, they would inevitably evolve separately. Later that month, I said the competitive restructuring of the network services business was proceeding steadily despite grumblings about the alleged failures of the telecommunications deregulation law.



I recall this history not to toot my own horn, but to show that the telecom industry isn't caught up in a mindless frenzy of anticompetitive acquisitions. In fact, events are proceeding in a remarkably rational way. Keep the big picture in mind. The global telecommunications industry will go from being 90% circuit-switched voice in 1995 to being 90% packet-switched data by 2005. The required infrastructure will cost hundreds of billions of dollars. It isn't a business for the fainthearted.

Perhaps the biggest surprise has been the central role of WorldCom, a company most of us had barely heard of a year ago. The folks from Jackson, Miss., clearly have caught the Big Three long-distance carriers napping. In a way, that's good news. With four committed players — WorldCom, AT&T, Sprint and MCI — fierce U.S. competition seems assured.

Given its spotty history, it's remarkable that AOL now stands alone, with Microsoft a distant second. But more than ever, AOL's position is a hollow lead, with the company struggling to use its powerful brand and a bit of unique content to keep one step ahead of the World Wide Web.

In trying to understand why Microsoft didn't bid for CompuServe, remember that Microsoft doesn't need to be in the online services business. Even without The Microsoft Network, the company could easily support its software customers and market any content it develops.

Most glaring of all, there's no profit in transmitting bits, and there won't be for a while. Perhaps that's why Microsoft has opted fo1 its television-oriented investments in WebTV Networks and Comcast.

BOTTOM LINE

As I've often noted, Microsoft's great wealth and position might make the company almost unassailable in software, but that invincibility can't be easily transferred to network and content endeavors. The bottom line is that it makes sense to be in both the content and transmission-services businesses only when one or the other is a scarce commodity. That was the case in the early days of movies, TV and cable TV.

But the Internet is different. Both content and backbone bandwidth are abundant. Therefore the natural economics of each business will pull them apart. With the recent decisions of WorldCom and AOL, that separation seems assured. □

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The Back Page

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Dispatches & images from the fringes of the electronic frontier

COMPUTERIZED CAR SEAT OFFERS CUSTOM FIT

Textron Automotive in Manchester, N.H., claims its adaptive seating" technology will put an end to the ache that accompanies car-seat fatigue. A small computer under the seat calculates the driver's weight and position, then adjusts the pressure in 10 strategically positioned air cells to create an ergonamic fit and less fatigue. It will be an option on the 1998 Cadillac Seville STS.

Computerworld INDEX

Corporations that lack an Internet/intranet disaster-recovery plan:	75%	People who consider voice mail a "necessity" for the office:	17%
Estimated cost to fix the year 2000 problem in Malaysia:	$3.2B	Reports of Internet fraud this year (incidents through July):	700
Gross domestic product of Malaysia:	$194B	Reports of Internet fraud last year:	389
U.S. teen-agers who have Internet access in their home.	43%		

Sources: Comdisco, Inc., Rosemont, Ill.; Associated Press; Central Intelligence Agency's World Factbook; Drexel University, Philadelphia; Roper Starch Worldwide Inc., New York; National Consumers League, Washington

Take a letter

MobileWord in New York may have the first online secretarial service *(www.mobileword.com)*. Traveling executives can dictate a letter by telephone and then retrieve the transcribed document from the Web several hours later. The service costs $3.60 per page.

A high-tech tribute to [illegible] Grace

A new U.S. Navy destroyer named for the late computer pioneer Rear Adm. Grace Murray Hopper was commissioned Sept. 6 in San Francisco. Hopper's sister, Mary Murray Westcote, attended the sun-drenched ceremony. The USS *Hopper* has the Aegis weapons-control system, a triple-redundant radar, a dual-redundant fiber-optic LAN and the ability to do battle on autopilot. The high-tech battleship is sailing to its home port at Pearl Harbor in Hawaii. — *David Pessel, Caliber Technology*

Inside Lines

Picture this

Both Digital and Storage Technology reached milestones in delivering disk arrays last week. But each had an interesting way of describing its achievement. Digital, in Maynard, Mass., claimed that its systems manage data "equal to a stack of floppy disks 14,000 miles high." Not to be outdone, StorageTek, in Louisville, Colo., said its systems maintain enough data to fill 1 trillion pages of text, or 211 — not 210 — copies of the complete contents of the Library of Congress.

I've got your guarantee right here . . .

Patrick Connolly, president of InvestorsEdge.com, an online investment service in San Francisco, doesn't have a guarantee for Internet service, preferring to use redundant connections set up by a local service provider that he knows and trusts. "Those guys at my [Internet provider] know their skin's in the game," Connolly said in an interview. "If the connection goes down, they know I'll drive over and kick their ass. That's my guarantee. My guarantee is in my quads."

NDS on NT slated for Networld

After a three-year wait, Novell will unveil an unbundled version of its Novell Directory Services database for the rival Microsoft Corp. Windows NT platform at the Networld/Interop '97 trade show in Atlanta Oct. 8, sources close to the company said. By unbundling NDS from its NetWare product, users can employ NDS to manage Windows NT users and user account information. That would assure users of integration between the two environments.

AT&T considering licensing strategy

AT&T officials last week declined to comment on a published report that the telecommunications giant was discussing a radical new franchising strategy at its annual board of directors meeting last weekend. Under the plan, described in a *Wall Street Journal* story Thursday, AT&T would license its brand name and marketing rights to wireless and local telephone carriers.

Putting the cart before the horse

Microsoft is even confusing itself with its ever-elastic ship dates. The software giant last week announced it was delaying shipment of Windows 98 until the second quarter of next year so it could make one version that will let Windows 3.x and Windows 95 users upgrade. Four days later, reporters received "beta" copies of *Introducing Windows 98*, published by Microsoft press. So why release a book that will be totally outdated before Windows 98 even ships? "We just wanted to give users a first look," a Microsoft spokesman said. "We will be releasing upgrades to the book." Now *that* sounds familiar.

What's next? ActiveX for school committee?

Java for sheriff? That's no joke in upstate New York, where someone named Joe Java is running for sheriff. Some lawn signs feature his picture. Others merely display a badge and the tag "Java for sheriff." But all the extra name exposure Java might have gotten from Sun's commercial for its Java programming language wasn't enough to carry the candidate through Essex County's Republican primary. Java finished second in a three-horse race with 2,117 votes to Henry "Hommes' 2,480 votes. But, fear not, Scott McNealy: Java is registered to run as an independent candidate in the Nov. 4 final election, Essex County election officials said.

Spammers have learned how to foil efforts to filter out their intrusive trash by making the E-mail they send appear to have come from the recipient. That foils any filters that have been set up to look at the "From:" line of a message and reject E-mails from known spammers. One such message piously proclaims, "This is the only way to allow the individual recipient and not their webMASTER decide whether they are interested in the message contents." How perceptive of these heroic individuals to realize that our systems administrators are appressing our rights to wade through megabytes of "Make money fast!" manure. Don't spam us, but do send your tips to news editor Patricia Keefe at (508) 820-8183 or E-mail her at patricia_keefe@cw.com.

The Back Page

altcw

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Computerworld INDEX

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DAVID PESSEL

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